University News

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Mother Teresa at the Seventeenth Annual Convocation of Kurukshetra University held on [redacted]uary 22, 1980

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Editor: ANJNI KUMAR

State Support to Research in Universities

Bhabatosh Datta*

I feel greatly honoured by your invitation to speak at the Seminar in which many eminent Vice-Chancellors from the Commonwealth Countries will participate. I was never a Vice-Chancellor and for the last ten years or so, I have not had any direct touch with any university. I have, however, some experience of the problems of research in the universities and of its financing. I shall try to bring together some of my ideas on the subject and suggest issues for discussion.

Here, again, I have a difficulty. When I was asked at very short notice to initiate the debate, I was not informed that the Seminar would discuss the problems of *science* research. When I became aware of this, it was too late to make any change in the arrangement. I am therefore entering into the discussion assuming that the problems of state support to research in universities are the same for every discipline, whether it is physics or biology, or economics or mathematics. In any case, there are persons here who have better experience than mine in the conduct of science research in the universities and it is their comments that will be the really valuable part of the discussions here.

There is one major difference between science research and research in other fields like the social sciences or humanities. Science research is highly capital-intensive and the recurring costs are also large. The costs of laboratories and equipment and of the materials used are very high and are increasing. The increase comes not simply from the rising prices, but from the use of new sophisticated equipment. The rate of obsolescence of old equipment is fairly high. In the social sciences, the use of computer has increased the costs, but computer-time can be purchased and the capital investments in research in this area are even now relatively small. The total fixed capital and working funds required for all research are nevertheless large and are increasing.

There is also the fact that the days of the lone research worker, carrying on his investigations without any human or financial assistance are practically over. It may be possible for a philosopher or a pure mathematician to read, meditate and work out exercises without help, but even for such a person the existence of an organized research unit is of great help. He at least requires a good library and he certainly gains if he can discuss his problems with others working in a similar field. In general, one can correctly hold that most research now is organised as team-work in specially organised departments of universities or in specialised research institutions.

**Chairman: Centre for Studies in Social Sciences, Calcutta.*

The latter category has grown in recent years only, at least in countries like India. Some of the older specialised research centres in India are the Institute of Science at Bangalore, the Tata Institute of Fundamental Research in Bombay and the Bose Institute, the Indian Association for the Cultivation of Science and the Indian Statistical Institute in Calcutta. Similar research institutions in social sciences have come up only during the last two decades and there has been of course a remarkable growth of high-level research bodies in the theoretical and applied science.

The field of advanced research in India now comprises the National Laboratories, the research institutions sponsored or financed by the Government, statutory institutions like the Indian Statistical Institute, endowed bodies like the Tata Institute of Fundamental Research, research units in industrial firms and, of course, the Universities. In the field of social sciences, there are now nearly a dozen highly capable research institutions financed by the Union Government and the State Governments on a matching basis. The existence of all these bodies naturally makes the problem of financing a crucial one, for there is strong competition in the demand for government funds. The basic competition is often between the research departments of the universities and the specialised autonomous research institutions.

It is now unavoidable that all research funds should come from the Government. Private financing of research institutions, or of research centres and personnel in universities has practically dried up, because of the combination of a number of factors. The place of rich landowners has been taken over by the rich industrialists and businessmen, but their donations to universities are negligible, despite the fact that such donations earn relief from income tax. When the industrialists decide to spend money for education and research, they prefer to establish new institutions under their own control. Calcutta University at one time got magnificent donations from top level lawyers and in fact the science faculty could not have reached its present position without the basic help of their gifts. But lawyers and professionals who earn high incomes these days have many reasons for not disclosing their incomes and assets by making large gifts.

Thus the universities compete with the specialised research institutions for grants out of the common pool of the tax-payers, funds. There is the problem of the aggregate funds made available for advanced research and then there is the next problem of the allocation of the total among different research bodies. The universities in India get their research funds through a few different channels : direct grants from the Government—Central or State; grants through the University Grants Commission; and grants from the bodies like the Council of Scientific and Industrial Research (CSIR) or the Indian Council of Social Science Research (ICSSR) for specific projects. The universities have an important responsiblity in deciding what part of the general or 'untied' funds available to them should be allotted to research. It is unfortunate that there are no generally accepted standards here and the funds which a particular department gets depends generally on the angle of vision of the top-level executive powers and sometimes on the horse-trading that the departmental heads are able to carry through.

From the standpoint of the Government, the institutions like the National Physical or Chemical Laboratories get priority. Sometimes it is argued that such institutions undertake research on 'live' problems, problems the solution of which will enable a change in the planning of projects, with a view to increasing or improving desired outputs. Though the universities do undertake research activities of this type, particularly when they get specific project grants from bodies like the CSIR or the ICSSR, they mainly engage themselves in fundamental research, which expands knowledge but which may not immediately yield measurable results.

This, it has to be emphasised, does not weaken the case for state support to research in universities, but really strengthens the case. If the universities do not undertake fundamental research, no body else will. And the history of scientific development has repeatedly shown that what is regarded as pure academic or theoretical research today may be the basis of an advance in the use of science tomorrow. Similarly, research in applied problems may open up new lines for theoretical inquiry. The line between theoretical and applied research is not a very definitive one. There is certainly a case for a balance between theoretical or purely academic research and research in applied problems. It is difficult to lay down the right principles for allocation, but it should at least be recognised that the universities should be given sufficient funds for utilising the research talent of the scholars who find the university atmosphere more stimulating than the atmosphere of the specialisd research institutions and for encouraging fundamental work. With all this, there may be a continuation of special assignments from the financing 'councils' for work on specified projects.

It is not always openly admitted in India that while there is a shortage of funds for research in the universities, there is a greater shortage of the right kind of research personnel. Such personnel have to be built up and encouraged to continue as research workers, overcoming the temptations offered by other bodies, by private industry and above all by foreign appointments. The shortages of funds and of personnel combine to indicate the need for some agreed division of research fields among the universities, so as to eliminate duplication of laboratories and equipment, under-utilisation of capacity and of personnel and local bottlenecks. Such division should not be enforced by the Government, but bodies like the Association of Universities, where all the universities meet on equal terms, may be able to find out acceptable lines of action.

There are some allied questions which crop up. First, there is the question of combining research with teaching. In the universities, this combination

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Let Us Have More Universities

Shib K. Mitra*

Universities today have to face very difficult problems, if they are kept open; and so most of the time, they are closed. They have to be closed because there is no other alternative to law and order, which, after all, every government is meant for assuring to its citizens. If, however, universities have to be kept open, as, of course, they must, for otherwise the citizens cannot have their wards educated at the higher levels in order that they can occupy the higher echelons of our society, the problems are most difficult indeed. Let us not minimise the importance of higher education simply because the problems are rather too many, too knotty and complicated to be solved.

No country can prosper if it does not value intellect and particularly an intellect which has been trained at highest level. After all, it is the quality of mind that matters, in spite of the over-riding considerations of GNP and what not, preached by that amoral science, economics. If money could produce quality of mind, the street-corner panwalla in a crowded locality should have more of such quality than those who produce the music he listens to over his transistor which he goes on playing so loudly. The point is that universities are necessary; and more universities are necessary, a point to which I will come later.

Now, let us consider some of the problems which a university may have to face if it is kept open. First, there is a problem of admission. Nobody believes that admissions are fair. Most people think that you have to speak to somebody who knows and is close to the powers that decide admissions in order that your son or daughter can get admission. If you belong to the right caste, the right community, if you have passed out from the right school and from the right college, if you have friends in the Union, if you know the local party boss, if you know or can get to know the M.P. (MLAs also count, but not that much!), if you have the right kind of father (I cannot specify this further, rightly or wrongly, because we had no other choice!), you can hope to be admitted to the courses of studies you want. The university in all fairness may decide to admit by the marks secured in the aggregate and in the subjects concerned irrespective of any other thing. But the demand for certain subjects is so great, that there is a great rush and a difference of one mark may mean losing admission. There are so many who will thus be disappointed and will be angry, because after all what does difference of one mark mean in terms of reliability (or shall we say unreliability of our marks) and, besides, so many will have to go out of their towns or cities to distant places in order to study the same subjects. These distant places may not have the same local language, the food may be different, the train, connections may not be convenient, etc. So, many students apply to many universities at the same time, blocking many places, because one may get admitted in several places, just as one may be rejected in all the places. Hence, in spite of the university procedures, there are terrific pressures on everybody concerned with admission. There is only one solution to this: Let there be more universities. Each one may be small. But it will reduce corruption. Education should not corrupt people, education should encourage people to outgrow corrupting influences outside education. But the present situation has made corruption a part of education.

Consider next, the most disturbing problem of the last decade viz. examinations. Universities cannot hold examinations in time, sometimes the examination of one year is held after two years, and the results are announced in the third year. If a university is able to hold the examination in the year it is due, it is under great pressure to postpone it by a few months so that the syllabus is completed and the students have preparation time. If one asks, why the syllabus was not completed in time, the answer one usually gets is that there were strikes. These strikes again are not just student strikes, but Karamcharis strikes and teachers strikes. Of course, one feels sympathetic to the students when they say that studies should be completed before they are examined. But nobody can suggest that, after all, in higher education, it is not the syllabus which should be the aim of lectures. The syllabus should merely indicate broadly the direction in which the student should move in order to master a subject, and an examination should seek to test his understanding and mastery of the subject rather than his memory of all the topics in the prescribed syllabus and the books. But this is where our university system has been contaminated by the school system. In the secondary board examination, one can understand the need for a detailed prescribed syllabus, prescribed texts and the need for teachers to cover all the topics and the texts prescribed. But why should this be the model of higher education? In higher education, one should be free to choose one's subjects and teachers; but one should have more time to read, study, analyse, criticise, discuss, write etc. and then face those who are masters of the subject, as often as possible. There must be a meeting of minds, a human encounter, in higher education, if it has to have any meaning. Otherwise, it is a deception and so students want to cheat in examination halls. They copy the answers from books or from better students. The story does not end here. The corruption which this system encourages is appalling. Questions are known in advance, in spite of secrecy procedures adopted by every university. Money is involved in this game. As the university follows a prescribed syllabus and books for each course of study, and as there are so many strikes when classes cannot be held, and as many of our students have also other interests (some political, some economic, some more personal), nobody is prepared to take the examination in its proper spirit.

**Director, NCERT, New Delhi.*

One tries to know the questions in advance, one tries to copy the answers in the hall (and outside the hall if possible), one may even get the answers written by someone else (for which one pays) and if after all this fails, one tries to replace the answer book by another, or change the marks given on the answer book or change the marks at the tabulation stage and so on. It is a sordid story that one hears, and it only shows a complete denial of all the values which education stands for. What can be done, one may ask. I will re-iterate the unpleasant solution, I have mentioned earlier: Open more universities. Let each university be small, where minds can meet, and not just bodies. Let there be a de-emphasis of detailed syllabus and prescribed texts. Let there be more emphasis on self-study, reading, writing, debating, criticising, experimenting, discovery etc. and also communicating with a superior mind whom the student should select as his mentor and meet such a person as often as possible under as natural set-up as possible. There may be examinations set by the teachers concerned with each student. But such examinations should ask few questions to be answered. Such examinations should challenge the boy or the girl to do something worthwhile, worthwhile for him or her, and for the community.

I know that the reaction to the solution I have presented will be described by many as reactionary and utopian. But I do not think so. There n is o conflict between the priority of primary and adult education and university education. Unfortunately, there is a feeling that it is either/or type of a situation. There is, however, no point in having for example, 50 colleges affiliated to a university and the university being held to ransom because of some colleges having thousands and thousands of students. There is no point in saying that the students should not have been there, or as the Education Commission said, that higher education should be selective. No, not in our country. For the first time we have students from the backward castes, communities and areas coming up to higher education. We should not deny them this privilege. Allow anybody who aspires to learn more. Make a college a university, so that students do not have to migrate from their places in order to get higher education.

One can argue that our colleges are by and large ordinary and cannot become universities. But how many of our universities qualify to that standard? That is not the point. Once it is decided to upgrade a college, a college will get the resources. Today these resources are unnecessarily spent in building huge campuses conducive to the development of a crowd mentality rather than the individuation that one likes to see in higher education.

Of course, the colleges will have to change their

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the mind, for, nothing can be more stimulating than close contact with the advanced students in a subject. Apart from this, it is from these students that the future research workers have to be picked up. One who teaches regularly can easily identify those who will be good scientists later. A compromise solution, tried successfully by some research bodies, is to allow these research personnel to do part-time teaching work in the neighbouring universities. It is desirable that scientists in universities and in research bodies should be in close touch with one another, through participation in teaching and in allied research programmes.

There is secondly the question as to what steps can be taken to re-stimulate the inflow of private funds to the universities. This is a complex matter now, but its complexity should invite attention to desirable improvements in the roles of the bodies like the UGC and other sponsoring or financing bodies like the CSIR or the ICSSR. There is a strong view that as far as practicable all financing of research by the Government should be routed through the UGC or through autonomous 'councils'.

I have tried to give here only a general picture of the situation obtaining now and to raise some problems and issues. I am sure the discussion on the subject will throw light on these questions and will enable this gathering to offer constructive suggestions for the widening and deepening of research in all fields of knowledge. ☐

[Summary of speech at Seminar organised by the Council of the Association of Commonwealth Universities at Max Muller Bhawan, Calcutta, on January 28, 1980.]

Resource Development for Adult Literacy —Some considerations

V. D. Singh*

A nationwide movement has been launched in our country to equip with the tools of literacy ten crore people in the age-group 15 to 35. The nation has assigned to itself a gigantic task which needs massive preparation and organization. The programme is going to be conducted by a variety of official and non-official agencies : students, teachers, social workers, unemployed youth, retired personnel and government officers; in brief, all available human resources are being employed in this programme and people of all kinds are being involved in imparting literacy and education to the illiterate. Although the government envisages the period until the end of March 1979 as the period of intensive preparation, yet, it is feared, a lot is going to be left to chance. For such a programme to be successful it is necessary to ensure that the field worker, i.e. the literacy instructor, is well armed with techniques and materials and has had proper orientation in doing his job. In a campaign it is not enough to have recruits and volunteers who are ready and willing to fight. Good intentions and zeal alone are not enough. In a war the recruits are properly trained before being sent on operations. They are equipped with ammunition. The soldiers at the front are backed by the rear-guard and supported by an uninterrupted supply of provisions. Illiteracy has to be fought on a war-footing. The literacy instructors will need expert training, teaching techniques, teaching materials, and post-literacy feeding materials. There is a fear that in our pre-occupation with financial allocation and the setting up of the structural hierarchy, we may not be able to give full attention to some important aspects of the programme–aspects which are related to its software as it were : training, techniques and materials.

An Outline of the programme published by the Ministry of Education suggests that preparatory action would include, among other things, the following areas :

> Development of capability in all states for preparation of diversified and need-based teaching-learning materials as well as making available teaching-learning materials for starting the programme.
>
> Development of training methodologies, preparation of training manuals as well as actual training of personnel at various levels to launch the programme.

The *Guidelines* published by the UGC suggests that the universities could do educational extension by preparing 'curriculum and teaching-learning materials for adult education and literacy programmes' and 'organizing training for various categories of functionaries, as well as orientation programmes for the senior government officials, leaders of public opinion and other groups'. Other extension activities to be done by the universities and colleges of NAEP would include 'production of reading material for neoliterates.'

Similarly, the working group includes sections on resource development; post-literacy and follow-up programmes; monitoring evaluation and research. In a *handbook* on the training of adult education functionaries, published by the Directorate of Adult Education, principles are laid down for the methodology of training of the various functionaries, and for evaluation.

These suggestions and enunciations of the policy show that there is full appreciation of what is needed. But for the achievement of the goals, an understanding of the requirements is only an initial step. Between-policy-framing and the actual implementation of these policies by the literacy instructor in the remote field areas, there are numerous steps of careful planning both of the organizational side and the actual content, techniques and materials of teaching, which may be called the software to distinguish them from the hardware aspect of the pogramme—finance, transport, building, control and supervision, etc.

Nearly ten crore prospective NAEP participants form a distinct group because they are neither like school pupils nor like college youth. No instructor can tackle them properly without appreciating their psychology, their needs and their expectations from NAEP. As the main attack of the programme is going to be on the illiteracy among the backward sections of our society, the learners in most cases will be those who are not only deprived of opportunities, but have also lost all hope and desire for any redemption. Most of them have accepted their social lot and it will need quite a great deal of effort to rouse and stir them. Two things are, therefore, of importance in this context : (i) the psychology of the socially depressed, and (ii) the psychology of the adult.

Simply because literacy is a useful acquisition, we cannot presume that somebody who is long used and reconciled to his illiteracy will readily appreciate and accept the usefulness of literacy. Before the literacy exercise begins, the literacy organizers will have to do all they can to create an atmosphere of confidence which convinces the prospective beneficiaries of the programme that is possible for them to become literate and put their new skills to advantageous use; that the time spent on learning the use of letters is worth-while. It will need quite a great deal of effort and ingenuity to give a push to the psychology of inertia: it will need quite a great deal of convincing. The pre-requisites of the operation, therefore, as well-thought-out strategies for motivating and ensuring the involvement of the participants in the adult education programme.

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With older adults, shyness and diffidence will be an obstacle to be overcome. The policy statement (para 3) rightly points out that to be able to motivate the adults, one should have an understanding of their interest, needs, psychology and attitudes as also of their behaviour in a learning group. An enthusiastic instructor may like the adults to behave like school children. Here one could quote what the policy statement says : "The adult education programmes must respond to their (the adults') cultural and intellectual level."

The adults will be imparted literacy in the language they have already learnt to use, i.e. their native tongue. For, they will have long since mastered its grammar and phonology and acquired vocabulary requisite for their purposes. Skills of literacy will involve recognition of and discrimination between letter shapes. The instructor will be well advised to exercise his observation of the shapes of the objects of daily use and relate them to the letter shapes being taught. The principle of association rather than mere imitation is likely to appeal to the adults more. Recognition of letters and discrimination between them could be taken up in contrasted pairs, i.e. pairs that are likely to be confused, e.g. the letters 'b' and 'd' of the Roman alphabet or the letters for the sounds 'bh' and 'm' in the Devanagri script. The variant letter shapes used in print and writing will create a certain degree of confusion for the neo-literate. A careful instructor will highlight the essential features of unity between the shapes used in the two conventions; he will draw the learner's attention to the identifying segments of the letter rather than the redundant or the divergent segments.

Some understanding of vision defects such as dyslexia will help the instructor appreciate the reading problems that some adults may have. The norms of literacy (UGC *Guidelines*) include both reading aloud and silent reading. Reading aloud is necessary for learning to relate pronunciation with spelling. Keeping in view an efficient use of the skills of literacy in future, the instructor should, however, emphasize the importance of silent reading. The learner's long acquaintance with his language would have given him the ability to anticipate and predict what will normally follow in a discourse. But this ability has to be developed so that the learner may exploit the phenomenon of redundancy in language to acquire a certain speed in reading for information. If the skill of reading is to be used as a life-long acquisition, then the right habits of reading deserve inculcation from the very start. Faulty habits of fixation, regression and vocalization will need to be checked.

Contrasted with reading, writing involves 'productive' skills. Hands used to chopping, pushing and gripping heavy implements will not easily adjust themselves to the holding of an object as light as a pen or pencil. One of the main tasks in writing practice will be to achieve neuro-muscular coordination. Control of shaking hands that produce shaking lines could be achieved first by demonstrating hand movement and later by making the adult learner make strokes in an easy and fluent way. Right shape and size of the letter along with proper spacing between letters, words and lines would be points deserving notice and practice. So will the use of punctuation marks. A half-hearted and casual approach to these matters of detail will greatly restrict the usefulness of the exercise and will not be helpful in making a proper impact on the adult as his literacy would be easily distinguished from the literacy of those who acquired it at school. True, that the approach to be adopted implementing the instructional programme should be flexible and informal. Informality should not, however, lead to unplanned or unsound instruction.

India is a country of 1,652 mother tongues and 10 major script system. Literacy has to be imparted in the spoken language of the adult. Reading materials for literacy instruction and for post-literacy feeding will have to be produced in a great variety of tongues and scripts. Not only this, the materials in order to be interesting and relevant to the needs of the neo-literates will have to deal with local culture, environment, crops, weather, legends and values.

In developing resources to which the Working Group draws our attention (Sec. VI), this aspect of multiplicity of patterns and local relevance will have to be taken careful account of. From this point of view, the lowest rung of the resource structure is the most significant. Reading materials to be used should not vary only in language and script, the content also should suit the interest and needs of individual groups. Constant evaluation and revision of materials in use is needed to keep them maximally suitable. More important than the designing of the initial reading material is the sequential planning of the follow-up materials so that the programme becomes an ongoing programme of continuing education.

The design of the follow-up reading materials should have a spiral pattern : gradual expansion of the scope of the area of interest covered as also a vertical raising of the level. If the developmental aims of the NAEP are to be achieved, literacy is only a starting point. To sustain this literacy, it is necessary to keep the neo-literate supplied with graded reading materials suited to his special sub-group within the target age-group.

The policy statement rightly lays it down that adult education 'While emphasizing acquisition of literacy skills should also be (among other things) *Systematic in all aspects of organization* (Para 3)', and goes on (in para 5) to point out 'the main areas of deficiency in adult education programmes in the past.' In order that these deficiencies do not afflict the present programme, the preparatory action should be as thorough as possible. 'Development of training methodologies, preparation of training manuals as well as actual training of personnel' deserve handling and execution by men who have experience and expert knowledge of doing these things. It would be a pity if we let loose on our illiterate adults a force of volunteers enthusiastic to do something but untrained or inadequately trained to do it. Volunteers or instructors not equipped with an understanding of the psychology of rural and urban backward adults, or with adequate instructional materials and methodologies of handling

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Educational Innovation at Rajasthan University

L. P. Vaish*

"If you can give a man a fish, he will eat it at once : if you teach him to fish, he can eat for his whole life".

—A Chinese Proverb

The present system of education, being grafted from outside on Indian soil, has proved most static, unfruitful and unrewarding in relation to problems of national development.

After Independence the need to overhaul the grafted educational system became more urgent and conductive. The various education commissions apppointed by Central and State Governments recommended not only for thorough re-orientation of the educational system but also stressed the need to change the 'content' of the courses bringing it more closer to the soil and society, career and culture.

The restructuring of University courses at the first degree level so as to make them relevant to the rural environment and to the developmental needs of the community is of complex nature and is significantly affected by a number of factors. Apparently, it is not possible to design and develop a universal curriculum, at the first degree level, which takes into account the rural environment, the developmental needs and aspirations of the community. In fact, it has to be different for different regions. However, such courses, if designed and introduced, must be acceptable to the community of the region, otherwise it may be an exercise without any substantial result. With this idea in view, the Chairman, University Grants Commission has rightly pointed out that special attention needs to be given to the orientation of the existing courses towards rural problems without creating a completely different channel for such studies. The courses are to be reoriented in such a manner that student can apply his theoretical knowledge to the problems of the region through field work, project work, extension work etc. In other words, the existing conventional courses may be integrated with concrete problems and courses related to agriculture, rural occupations, cottage industries, developmental activity and natural resources of the region which may promote opportunity for self and wage employment in the region.

Thus the task of re-orientation of existing courses at the first degree level, so as to make them relevant to rural environment, to developmental needs of the community, and for promotion of opportunities for self and wage employment, is of very complex nature and needs very careful planning and thought. We have to be very cautious in taking steps in a way that not only the courses may prove useful but they may be readily acceptable to the students and community of the region.

The College Development Council found an immense potentiality in combining academic courses with the need-based, self and wage employment oriented courses. An important requisite for development of such courses is the identification of areas which (on the basis of careful economic analysis) indicate opportunities for self and wage employment in the region and is relevant to the developmental needs of the community in the region. With this objective in view the College Development Council came forward and submitted a concrete and viable proposal to the University Grants Commission for restructuring the first degree level courses in selected colleges in backward and rural areas of Rajasthan. The proposal was accepted by the U. G. C. and it agreed to give necessary financial assistance for the purpose by way of a seed grant.

As a result of the deliberations, discussions and regional workshops the following consensus emerged which served as guidelines for the second stage of the Project implementation. :—

1. Under the existing degree courses in the faculties of Arts, Commerce and Science one new subject, in a particular college, based on the accepted needs be started. Each candidate may be allowed to choose this subject for his first degree in Arts or Commerce or Science as one of the three optional subjects which he studies at present. A candidate who has studied and passed this subject together with other subjects be awarded the B. A., B. Com. or B. Sc. Degree depending upon the faculty in which he was admitted. Such a subject would not be in addition to the existing three subjects that a candidate studies at present but would be one of the regular subjects.

Accordingly the following subjects were approved for different colleges :

1. B. D. Todi College, Lachhmangarh-Sikar.—'Sheep and Wool.'
2. Govt. College, Tonk.—'Livestock and Leather'.
3. Bangur Govt. College, Pali.—'Cotton Textiles Bleaching, Dyeing & Printing'.
4. Govt. College, Banswara.—'Forestry & Forest Products'.
5. Banasthali Vidyapith.—'Textile Craft'.

2. One more subject be added under the list of Compulsory Subjects in Group (iii). Its

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*Coordinator, College Development Council, University of Rajasthan.

nomenclature may be either "Rural Development" or "Rural Problems and Reconstruction". It may be offered by a candidate in place of H.I.C.C., General Education etc. Candidates offering the need-based subject started may be encouraged to choose this subject under Group (*iii*).

Workshops of two days each were held to develop courses and assess requirements of faculty, instructional staff, and laboratories. The main aim of the Workshop was to involve the local expertise in designing the course outline so that needs and requirements of local environment could be taken into consideration. Such course outline could be more acceptable to the community and useful to the students. For this purpose the background and working papers were prepared by the College Development Council.

After receiving the recommendations and courses the University appointed Committees of Courses under this Project to finalise them for consideration of the Academic Council.

In each subject six papers have been designed—two papers each for I, II and IIIrd Year classes. *Practical and field work would be compulsory and would get high weightage according to the needs of each subject.* The Committees of Courses recommended the provision of these subjects in all the three faculties :—

"Sheep and Wool" for Lachhmangarh College :

Papers :—

1. Elements of Sheep Husbandry.
2. Elementary Sheep Production.
3. Sheep Health and Nutrition.
4. Sheep Breeding.
5. Wool-grading and processing.
6. Marketing of Sheep and Sheep products.

"Livestock and Leather" for Govt. College Tonk :

Papers—

1. Elementary Animal Husbandry.
2. Animal Nutrition and Breeding.
3. Elementary Leather Manufacturing.
4. Other Animal products and bi-products.
5. Elementary Leather working.
6. Marketing Organisation and Management.

The Courses and syllabi for other two colleges are in process of development.

As mentioned earlier the subject "RURAL DEVELOPMENT" is to be included in Group (iii) of Compulsory Subjects. In the workshop held for development of syllabi of this subject the following five units have been introduced :—

1. Physiography—Natural Resources.
2. Concept of Rural Development.
3. Rural Economy.
4. Rural Social Structure.
5. Development, Administration and Planning.

Meanwhile, the Council received a proposal from Banasthali Vidyapith Gyan Vigyan Mahavidyalaya, Banasthali for introduction of new subject "Textile Designing" as one of the optional subjects at first degree level. The proposal was considered by the Sub-Committee constituted by the College Development Council.

Five papers as mentioned below were designed with the help of Experts Committee of Courses:—

1. Weaving and Dyeing Theory, Practicals.	) Ist Yr. T..C.
2. Weaving theory.	)
3. Dyeing and Printing Theory Practicals.	) IInd Yr. T.D.C.
4. Weaving Theory.	)
5. Printing Theory. Practicals.	) IIIrd Yr. T.D.C.

In this course 30% emphasis on theory and 70% emphasis on practical work is recommended.

Future Plan:

(i) All the Committees of Courses unanimously reoommended that the instructional material for the subjects be got prepared immediately by the College Development Council. Efforts to obtain financial assistance from the UGC be made.

(ii) The Development of syllabi for "Forestry and Forest Products" for Banswara and "Cotton Textiles Bleaching, Dyeing and Printing" for Pali is already in process and it is hoped it would be soon formulated.

(iii) The process of identifying the areas and development of need-based courses in other four colleges shall be taken immediately.

(*iv*) The College Development Council will now assist individual college for maturing proposals and plans for UGC assistance—the courses have since been approved by the Academic Council. ☐

Resource Development for Adult Literacy

(*Continued from page 136*)

instructional programmes for them are not going to achieve a lasting success. Preparatory action envisaged in An *Outline* should precede the execution of the programmes, and not go on simultaneously. At the same time, a longitudinal programme of evaluation, revision, improvement, and publication of books for the neo-literates should be taken up so that the newly acquired literacy does not lapse but is utilized to make education a life-long process. ☐

[*Courtesy* : **Journal of Indian Education**]

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CONVOCATIONS

Human Factor in Development

For the Indian economy the seventies had a sad ending. Soaring prices and shortages of essentials were causing wide-spread distress. Deeper down, as a continuing long term trend, the number of the unemployed was rising from plan to plan, year to year.

There were many who began to find fault with past policies, taking care to pick on those for which they themselves could disown responsibility. Such an approach belittles the magnitude of the achievements we have made during the last three decades of development. In agriculture, we have overcome shortages of foodgrains to a situation of surpluses. Having been involved in the past in the humiliating task of having to seek aid even to feed our people, I cannot but take this opportunity to pay a tribute to the people of Punjab for their role in bringing about this transformation. In industry we have been ranking among the top ten nations, while we have the third largest scientific and technical manpower in the world. It is indeed a powerful potential for progress that we have built up in thirty years of planned development. But at the same time we must, as we step into the eighties, take fresh stock of the situation.

When we started with our plans, we rightly focussed on the shortage of capital as the main obstacle to our development. People with low incomes can save but little. Low savings result in low levels of investment. And with low investment and rising population incomes cannot rise. We had to get out of the vicious circle in which, as Nurske put it, people are poor, because they are poor.

But if we look at the state of the Indian economy as the seventies drew to a close and analyse the causes underlying its pitiable condition, we cannot but recognise that the real problem was not the inadequacy of investment but the inability to make full use of the capacities we had built up. It was essentially a crisis of performance, creating a vicious circle of a very different nature.

At a time when the economy was staggering under the shock waves of oil shortage, domestic energy sources also began to shrink steadily leading to an all-round decline in output and a plummeting of every economic indicator, except the price index which soared upward. What was threatening to bring the economy to a grinding halt was not inadequate investment in power, coal and transport. The real tragedy was that the power plants were generating far less electricity than they had capacity for, and a very high proportion of the power generated was getting lost in transmission. Collieries complained that shortage of power hampered their production and also blamed lack of rail transport for low supplies to consuming industries, including thermal power plants. Railways complained that lack of coal and lack of power crippled their carrying capacity. Power plants complained that shortage of coal compelled them to curtail their power generation. The failures were on the performance front.

This was not a solitary misadventure at a particular time in a particular area. In widely different fields the poor quality of human inputs repeatedly comes in the way of the country getting full advantage of investments financed by imposing heavy taxation. Lack of proper maintenance of expensive machinery, cumbrous controls and levies which slow down road transport, ill-qualified staff in schools and hospitals erode the return on the capital invested, both in financial terms and in terms of the services it is expected to provide. While the standard of surgery in India is as good as in any highly developed country, the mortality rates are worse than they should be because of the hazard of the patient suffering from sceptic infection after the operation, just because the quality of the staff responsible for maintaining hygienic conditions is so poor. In our daily life, the constant breakdown of telephone services, the late running and accident-proneness of trains and planes, fires caused by short-circuits and innumerable other grievances of the public can be traced ultimately to lapses on the human front.

A good deal of public discussion takes place on the problems of the educated unemployed. Let us also consider side by side the problem posed by the uneducated employed those who have not adequate education or training to discharge the responsibilities they are entrusted with. Indeed both the problems are two sides of the same coin. In the British days with limited opportunities for higher education, graduates could be absorbed in the bureaucracy or by the bar. Today the educated can no longer find adequate employment opportunities in desk jobs alone, though all too often even those with technical training aspire to become quill-drivers. Equally, for the jobs for which half a century ago we used to rely on so-called menial employees, now renamed as Class IV employees, we can and must provide adequately qualified personnel. Those with education must be ready to work with their hands. Those who work with their hands must have education.

But the role of the human factor in development goes much beyond the provision of manpower of adequate capability for different assignments. Early economic theorists had confined their attention to capital, land and labour as the factors of production. But these are the passive elements working for profit, rent or wages. Behind them, mobilising them and marshalling them, there must be a dynamic element which is the real human factor in development. Neither Adam Smith, who is regarded as the father of modern economics, nor Ricardo, nor John Stuart Mill took notice of the role of human creativity in economic progress. The first economist of repute to do so was Karl Marx. His championship of labour is well-known. What is not so well-known is that after having outlined the historical background of capitalist development, in a few strong strokes in his Communist Manifesto, Marx launched out on a panegyric to the entrepreneur, whom he called the bourgeois, that has no equal in economic literature. "The bourgeois", he said, "has been the first to show what man's activity can bring about. It has accomplished wonders far surpassing Egyptian pyramids, Roman aqueducts and Gothic cathedrals."

Writing long after Marx, Schumpeter made entrepreneurial activity the very corner stone of his theory of economic development. He defined it as the ability to perceive new opportunities and the will-power needed to break down the resistance that social environment offers to change. By way of illustration he distinguished between the kind of economic effort which could lead to an increase in the number of animal drawn vehicles as traffic increases, and the kind of vision which results in the construction of railway systems to cope with the same problem.

An entrepreneur is not necessarily an individual. Entrepreneurship can be and usually is provided by corporate bodies, whether in the private sector or the public sector, as well as by the government itself, at the Centre or at the State level. In any case it is only human beings who can provide this dynamic input into development. With the complexity of modern society, entrepreneurship to be successful is becoming a composite inter-disciplinary exercise, drawing upon and pooling together different capabilities, such as raising of the capital, choosing the technology and provision of good management. This composite approach is usually provided not by a single person but by a group, what Galbraith calls the techno-structure which is "the guiding intelligence, the brain of the enterprise".

The increasing importance of the human factor over capital in stimulating growth has been brought out by a number of analytical and comparative studies. In the growth achieved by the U.S. between years 1948 to 1969, capital contributed less than one fifth, while a definitely higher ranking was of improvement in lobour output attributable to advances in knowledge and general efficiency. Likewise in accounting for the higher growth rate than that of the U.S. which Japan, West Germany, France, Italy, Netherlands, Canada, Belgium, Denmark and Norway achieved between 1953 and 1971, it has been found that in no case did capital account for more than two fifths of the difference; usually it accounted for much less and in some important cases for none at all. The time has come when we must lay a much greater emphasis on the human factor than on capital resources in planning our development.

There is no dearth of talent in our country. Our scientists and technicians are proving their worth world-wide in the most developed country of the world, the U. S. A. as well as in developing countries, where their talents are being used to set up new industrial projects and power plants and to construct bridges, air terminals and railway systems. Instead of just lamenting over brain drain and blaming others for it, let us think of ways of creating the conditions and opportunities to harness the talent and not merely to bottle it up.

Our first effort must be to improve the quality of the administration by getting people in position who are equal to the responsibilities they shoulder. Erroneous administrative judgments in an economy which has a plethora of controls, each administered by a different controller with his own concerns and preoccupations, can and often does play havoc in the economy, wasting scarce capital. Efficiency of administration has a vital role in making the economy perform at peak levels. The task of finding the right man for the right job cannot be fulfilled by treating each job as a preserve of a particular service, and selecting its seniormost member for the highest assignments.

But the problem is not one of personnel only. We must also think of the organisational framework. We have a planned economy. Even countries which do not subscribe to the concept of planning have an elaborate apparatus for economic management : to guard against inflation, to promote employment, to stimulate growth and to look after the balance of payments. The success of any management depends upon achieving a proper balance between centralised and decentralised decision-making. The fixation of *targets, the determination of* priorities, the allocation of funds, these must be matters for decision at the top, of course after the fullest consultation with people at the executive and operational levels. But to make full use of the talent and capabilities in our people, there must be the maximum delegation of decision-making powers to individual enterprises, their managers, supervisors and even workers, so that they do not feel that they are merely executing orders and working to rule but can show initiative, can innovate and improvise. Once the goals have been set, the maximum freedom should be given to those responsible for achieving them to do even better if they can, within the limits of the resources available to them. Time and again in the milieu in which we work, the coming into being of productive capacity which would be in excess of planned targets is opposed, while attempts to produce more than the licensed capacity in existing units is questioned and even penalised.

When we adopted five-year

planning we had been inspired by the Soviet example. The Soviets often proclaim with pride how their targets have been over-fulfilled In this country we seem to be maintaining very strict watch to prevent this happening. Let me in this context quote from a Soviet publication by Pekarsky dealing with Soviet planning experience. He says "The workers, engineers and managers of a Volgograd production association manufacturing tractor components......drew up a plan supplementing their assignment for 1978 which had been endorsed by the Ministry......By fulfilling it the enterprise made additional profits....a big part of this money being used for incentive payments to the employees." In more general terms, he asserts, "Teams, workshops and enterprises, competing among themselves, find new possibilities for increasing output, lowering production costs and improving the quality of products; and they undertake more ambitious obligations..than the figures of the controlled assignments set by the Ministry." In contrast our massive public sector units have to seek a clearance of the Ministry, which often means a fairly low and usually ignorant level of the bureaucracy, not only in regard to what they do but how they do it.

The basic point I am trying to make is that in the ensuing decade a whole new effort must be launched for better management and better organisation to make the fullest use of our manpower, not just as a substitute for horse power, but as an engine of new initiatives and new ideas to take the country forward. The aim of development is not to develop things but men. Industry and agriculture, power and transport are not ends in themselves. Ultimately what matters is the human satisfaction that they bring the quality of life that they provide. One could well use the words with which Abraham Lincoln described democracy to get a proper focus on development. What we need is development of the people, by the people for the people.

And it is because I attach the greatest importance to the increasing involvement of men and women with education and ideas in our developmental effort, that I feel elated by the opportunity which I have today of wishing all success to those who have been recipients of degrees this morning. To them I would say : do not join the long queue of those who are seeking jobs; try rather to become a creator of new jobs. Do not ask what the community has to offer you; instead offer to the community the initiatives it needs, to build a better future for you as well as those who have not had the benefit of a university education.

Research programmes at farm varsities

Addressing the eighth convocation at the Tamil Nadu Agricultural University, Coimbatore, recently Shri R.V. Swaminathan, Union Minister of State for Agriculture said that universities should set up standing committees of students and staff to promote conservation consciousness among people. Such committees could also help in implementing the afforestation and soil conservation programmes of the Union Government and other agencies. Shri Swaminathan emphasised the need for increasing per acre yield which posed a formidable challenge for scientists and farmers. The production would have to be increased to meet the demands of larger population in the face of shortages. The country should collaborate with other nations to develop research to programmes to find out alternative sources of low cost energy. The scientists should also evolve strains that could withstand flood and drought. The Union Minister said that care should be taken to see that education system, research and extension were oriented to the conditions prevailing in the country. Research activities of the universities should be action-oriented and should have definite rural bias. Duplication in the research programmes carried out by the departments of agriculture and farm varsities should be avoided.

Shri Prabhudas Patwari, the State Governor and Chancellor of the University conferred the degrees on 642 candidates.

Shri T.N. Lakshminarayanan, Pro-Chancellor of the University released two volumes of research work brought out by the university.

Special assistance to Poona Varsity

The University Grants Commission has sanctioned a special assistance of Rs. 15 lakhs to the statistics department of Poona University for promoting research and postgraduate education in mathematical statistics. Prof. S.R. Adke, Head of the Department has been designated as the Project Coordinator of the centre.

Personal

1. **Prof. Gurbux Singh, former Vice-Chancellor of University of Hyderabad, has been appointed Vice-Chancellor of University of Delhi.**

2. **Dr. (Mrs) Hemlata Swarup Principal, Acharya Narendra Dev Degree College, Kanpur, has taken over as Vice-Chancellor of Kanpur University.**

3. **Shri Ramji Lal Sahayak has been appointed Vice-Chancellor of Rohilkhand University.**

4. **The Banaras Hindu University has decided to confer the degree of D.Litt. (honoris causa) on Professor Nihar Ranjan Ray for his outstanding contribution to the study of Indian art, history and culture and to the cause of higher learning and research in India.**

CAMPUS NEWS

Jammu Varsity organises Seminar on Semester System

Shri L.K. Jha, Chancellor of the University of Jammu, while inaugurating the seminar on semester system organised recently at the new campus of the university said that instead of splitting the courses mechanically into two portions, the collateral studies should be woven into the fabric of curricular canvas visualise an integrated, inter-disciplinary curriculum.

Prof. S.C. Dube, Vice-Chancellor of the University, gave a profile of innovations contemplated by the university. He urged for a policy in the new switch over which was well considered and critically examined. Prof. Dube cautioned against the ritualistic approach to the semester pattern and underlined the pre-conditions for promoting a genuine learning ethic, an interested student community, self-contained courses imaginative and creative teaching fraternity.

Prof. Rais Ahmed, Vice-Chancellor of the University of Kashmir, who chaired the first session of the seminar gave an idea of the progressive thrusts made by his university in the direction of semesterization. He explained that how the centre of gravity had shifted to learning and learner from the teaching and teacher without minimising the vital role of teacher.

The seminar made an indepth study of the rationale, mechanics and implications of the semester system. It was felt that in view of perspective of the difficulties envisaged and complicated issues involved in implementation of semester system, a continuous discussion and dialogue among the university and the faculty should be maintained. Agreeing with the inherently sound philosophy of the system, the seminar arrived at a consensus that the semester system, was a distinct improvement on the existing system which should be replaced as early as possible. A reasonable period should be spent at preparatory and exploratory stage. All aspects of the system should be reckoned with and students and teachers involved in implementing the new scheme should be exposed to the orientation of the new programme.

The two-day seminar was sponsored by the College Development Council of the University in association with the Centre of non-formal Education. The participants included educationists, resource persons from various universities, teachers from post-graduate departments and affiliated colleges.

Reorientation of commerce courses

Inaugurating the state level conference of commerce teachers of Tamil Nadu held recently in Madras, Shri Prabhudas Patwari, State Governor said that commerce education was vital to the society. The education system should be oriented to the present needs and conditions prevailing in the country. The Governor suggested that lessons on morality and ethics should be included in the curriculum.

Dr. D.C. Kothari, an industrialist in his keynote address urged the commerce teachers to undergo refresher courses in banks and other institutions to acquire practical knowledge of accounting system and allied practices. He said that students should be exposed to practical training before they were awarded B. Com. degrees. Shri Kothari said that the weakest link in commerce education was marketing and much remained to be done for updating the syllabus.

Prof. G.R. Damodaran, Vice-Chancellor of Madras University, who chaired the valedictory session said that an apex body for commerce education should be set up to take care of manpower requirements in the country. The Vice-Chancellor suggested that provision for apprenticeship be made for teachers and students involved in the study of commerce at degree level.

Missing link in farm technology

There has been a missing link in the whole system of transfer of technology to the farmers despite the progress in agricultural research and extension education. The system lacked proper rapport between the laboratory and the farmer. Shri R.V. Swaminathan Union Minister of State for Agriculture made these remarks in Delhi while inaugurating a five-day national seminar of farm journalists. He urged the journalists to help bring about a transformation in the daily life of the farming community by enabling them to imbibe the new technologies and methods. It was estimated that the country would have to produce over 200 million tonnes of foodgrains by the end of the century to keep everyone fed. With improved farming methods and scientific tools, it was possible to attain this target. This called for a massive effort with proper rapport with the rural masses. The Minister referr-

AIU President

Dr. Ramaranjan Mukherji, Vice-Chancellor, University of Burdwan, has been elected President of the Association of Indian Universities for the year 1980-81.

ed to the lab-to-land programme initiated by the an Council of Agricultural Research and said it was being watched with considerable interest even at the global level since it was designed to transform the very fabric of the family through an integrated approach. The farm journalists with their down to earch approach to problems could play an effective role. He said that an agronomic practice or a plant protection measure became more understandable when it was put in simple words rather than in laboratory expression of scientists.

Delivering the keynote address, Union Agriculture Secretary, Dr. M.S. Swaminathan, said India could produce over 100 million tonnes of rice and 50 million tonnes of wheat before the end of this decade from lesser area than at present through scientific land and water use planning. He suggested a concerted movement through a three-pronged strategy fire elimination of hunger in the country in the 80s the strategy would comprise improving, producing and productivity through elimination of constraints responsible for the gap between the potential and the actual yield, improving conservation from the time of harvest to the time of consumption and improving consumption by improving the purchasing power of the rural and urban poor.

Earlier, Director-General of Indian Council of Agricultural Research, Dr. O.P. Gautam and Director of Indian Agricultural Research Institute, Dr. H.K. Jain, explained the programmes on the anvil to improve the transfer of technology to the farmer. Dr. Gautam also outlined the challenges of agricultural scientists for the 80s.

ICMR's new strategies for the decade

The Indian Council of Medical Research has worked out plans to launch in this decade new strategies for research and control of diseases. Prof. V. Ramaligaswami, Director-General of ICMR said that the major health problem of the nation could be solved by greater interaction of the public health authorities with the ICMR and other medical research institutions. He said the Council's strategy is to locate and mobilise medical talent wherever it is and to follow a task force approach to selection of research project of immediate relevance. Dr. Ramalingaswami said the ICMR's thrust would be on communicable diseases, malnutrition, population growth and health delivery system. He said the Council would hold later this year an Indo-American workshop on genetic engineering which will give practical demonstrations of techniques used in genetic engineering. The Council also plans to strengthen the medical survelliance system and many diseases like kalaazar and Japanese encephalitis have come back due to lack of survelliance and anticipatory action. The Council has taken the first step toward the development of a vaccine against Malaria. The Malaria parasite has been cultured in three cuntres in India and antigens from the parasites have been extracted. The antigens are the raw material for the vaccine. Dr. Ramalingaswami expressed the hope about the development of a vaccine against leprosy in about five years. The ICMR has taken a deliberate policy decision to support research in indigenous medicine. The Council has started work on testing of killed polio vaccine which was more effective than the currently used oral polio vaccine.

Science for better life

Prof. M.G.K. Menon, Secretary, Department of Science and Technology, Government of India, said in Bombay that science and technology should be used as the bone for an integrated global approach for the solution of problems of mankind. He called for the evolution of a new strategy to remove the imbalances between the developed and developing countries. Prof. Menon made ilues recently whill inaugurating a new Research and Development Centre of Britannia Industries Limited. He said that the world was witnessing major changes due to transition brought about by science and technology. The development in the last century had not yet produced Utopia of growth and propersity for all. The ever increasing world population and the energy crisis were posing problems. He stressed that the non-governmental agencies could play a role in undertaking research and development work, utilising the large force of educated personnel for such work. He said that the contribution of industries to Research and Development in the country was only 20 per cent and the share of private industry in it was only 13 per cent. He said that Pandit Nehru had taken personal interest in science and technology and the credit for putting India on the world map of research and development should go to him.

Bihar Universities to hold special examinations

The Vice-Chancellors of the universities in Bihar have been requested to conduct extra examinations during the next few months to clear the backlog of pending examinations and allow the students who have completed their course to appear at any of them. Any candidate who has completed his course and was eligible to sit at the examinations which would be held in rather quick succession and completed in the shortest possible time with no gap between the papers as far as possible.

The decision to hold these examinations was taken at a meeting of the Inter-University Board held recently in Patna. It was felt that the examinations in the universities of the state were several years behind and students had to suffer on this account in several ways. The Chairman of the University Grants Commission had also expressed concern to the State Government and had indicated that if examinations were not expedited the Commission might be forced to stop the grants being given to these universities. Under the circumstances it had been decided that these three examinations should be completed and the merit list of each of these examinations be published examinationwise. There will roughly be a gap of two to three months between any two of the examinations for any degree. All examinations will be held strictly according to the time table announced and evaluation done with due sanctity and in the fairest possible manner. Any examination in which unfair means is adopted would be cancelled. To help the students to avail of the facilities of all these examinations, it has further been decided to arrange a programme of intensive teaching in all the universities by arranging extra classes on sundays, holidays and during vacations besides on the normal teaching days.

Ambitions development plan for Patna

The Patna University has prepared a Rs. 5.60 crore modernisation plan for all-round academic development during the sixth plan period. The Vice.Chancellor of the University, Dr. K.N. Prasad, said that under the core plan, likely to be approved by the University Grants Commission, the university proposed to open new departments of bio-chemistry and mass communication. He said the department of home science would start functioning from this academic session while the department of library science was awaiting the clearance of the State Government. Under the subsidy core plan the university proposed to renovate old buildings, open more health centres, twenty new hostels for boys, girls and research scholars and a sports complex.

The Vice-Chancellor said that the State Government has allotted 250 acres of land for the expansion of the university. Two colleges, one each for boys and girls would be opened. Other schemes included the establishment of a centre for research methodology, data preservation, centre-cum-archives, starting of a condensed science course for school teachers, plan to engage good retired teachers for preparing textbooks and non-formal education for women. Dr. Prasad said that the Government should concede the long pending demand for converting Patna University into a central university.

New Secretary General for ACU

Mr. Anastasios Christodoulou, CBE, MA (Oxon), Secretary of the Open University since 1969, will succeed Sir Hugh W. Springer, KCMG, as Secretary General of the Association of Commonwealth Universities when the latter retires on 30 September 1980.

Born in Cyprus in 1932, Mr. Christodoulou attended St. Marylebone Grammar School in London and later held a classical scholarship at The Queen's College, Oxford, where he graduated in 1955 in Philosophy, Politics and Economics. He joined the Overseas Civil Service in 1955 as a member of the first Devonshire Course for District Officers and served the Government of Tanganyika for the next six years, first as District Officer and later as District Commissioner and Magistrate; he still speaks Kiswahili fluently and is competent in modern Greek. He joined the administrative staff of the University of Leeds as Assistant Registrar in 1962 and was appointed Deputy Secretary to the University in 1966. In 1969 he became the founding Secretary of the Open University and has since been responsible, as the Open University's chief executive officer, for the inauguration and direction of the University's academic, financial, staff and general administration. His work for the Open University was recognised in 1978 by his appointment as Commander of the Order of the British Empire.

In his new post Mr. Christodoulou will draw on a deep interest in the Commonwealth which arises from his birth and public life overseas, and on a wide knowledge of public and university administration. His experience of university work is enriched by experience in the development of the innovative Open University, an institution which has had such a considerable influence on educational methods in all parts of the world.

A. Christodoulou

He has an especial interest in the role of distance teaching methods in the development of the third world and has been active in contact and negotiation with educational and administrative organisations in Africa and Latin America as well as in the United Kingdom and Europe.

Mr. Christodoulou, who is married with four children, maintains interests in sport (especially rugby) at which he played for Oxford University and Tanganyika. (and cricket), in music, in community service and in international affairs. He will be the third Secretary General of the Association to have held office since the war, his predecessors being Dr. J.F. Foster (Australian), 1947-70, and Sir Hugh W. Springer (Barbadian), 1970-80.

New archaeological excavations in Andhra

Archaeologists working at Kudewalli in Mahbubnagar district of Andhra Pradesh have found two gold coins, one belonging to a Roman emperor of the fourth century and the other to a Byzantine empoeror of the fifth-sixth century A.D. providing proof of ancient Roman and Byzantine trade relations with this parts of the country. The archaeologists are working on a complicated project of shifting the eighth century A.D. Kudawalli Sangameshwar temple to Anantpur on the bank of the Shrishailam reservoir under which the entire area is going to be submerged. The most crucial part of the shifting operation is over. According to Mr. N.C. Ghosh, Superintending Archaeologist, Archaeological Survey of India, Nagpur, one of the gold coins belonged to Emperor Constantius II of Rome who ruled between 337 and 361 A.D. The other is a half piece of a gold coin belonging to Emperor Anastasisus of Byzantine whose reign lasted from 491 to 518. The two coins have marks on them which show that they were authorised as accepted currency by the Indian rulers of the time. The archaeologists have also resumed excavation at Satnikota in Kurnool district, a site of ancient habitation which is also going to be submerged in the Shrishailam reservoir. The special feature of the Satnikota habitation of the first century in a fortification, a moat and a drawbridge. The entire plan of fortification of the settlement has been traced. The stone wall was encircled by a moat cut into hard natural rock. The settlement could be approached over a gateway and some sort of a drawbridge.

Modern habitation at the site prevented the archaeologists from uncovering further evidence of town planning in the ancient settlement. But they could find a series of grain silos covered with tiles. The archaeologists also succeeded in understanding the plan of filling the moat—the natural water was collected in a nearby catchment area at a higher level and water was released into the moat from there. About two kilometres from this site, the archaeologists uncovered burial sites associated with the Iron Age period, with a passage and an upright chamber covered by a slab. Passage burial sites were common in Karnataka and their discovery at Satnikota and along the Tungabhadra proves migration of people to this part from Karnataka. The most recent excavations at Satnikota have yielded evidence of Middle Stone Age relics. One of the significant finds is the site of a pre-historic factory where stone tools were being manufactured.

Pre-historic civilisation found in Rajasthan

An ancient civilisation around Pugal, 85 kilometres north-west of Bikaner in Rajasthan has been discovered during the course of a recent investigation conducted by the Geological Survey of India. Mr. D.C. Das Sharma of the Geomorphology and Environmental Geology Division, Western Circle, has recovered a long stone blade and two copper pieces representing top portions of a spearhead and knife respectively besides a number of microlith from the site. The implements recovered are considered to be 4,500 years old as per the archaeological test. A culture similar to the famous Ahar culture of 200 BC at Jarol in Udaipur district has been discovered. A painted black and red pottery pieces from an extensive circular mound adjoining a tributary of the Gomati river has also been discovered. An archaeologist of the Archaeology Museum, Rajasthan, described the antiquity as similar to Ahar culture prevailing in the region about 400 years ago.

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4—9 Feb. 80	Management by Objectives.	Hyderabad	Admn Staff College of India
4—13 Feb. 80	Recent advances in computer techniques in Meterology, biomechanics and applied systems.	Delhi	I.I.T.
9—13 Feb. 80	World Marketing Congress	Delhi	F.I.C.C.I.
11—15 Feb. 80	International Seminar on the management of the environment.	Bombay	Bhabha Atomic Res Centre
12—15 Feb. 80	Education policy seminar.	Hyderabad	Admn Staff College of India
15—18 Feb. 80	XXII Indian Veterinary Conference	Gauhati	Indian Veterinary Association
17—20 Feb. 80	Workshop on Kalidasa	Ujjain	Kalidasa Akademi
18—23 Feb. 80	Sales Management Course	Hyderabad	Admn Staff College of India
18—6 Mar. 80	2nd International Course-cum-symposium on bio-chemical ENGINEERING AND BIOCONVERSION	Delhi	I.I.T.
21—24 Feb. 80	International symposium on cell differentiation and proliferation.	Madras	
21—24 Feb. 80	Seminar on political change and sociology, economic structure in 18th century India.	Amritsar	Guru Nanak Dev University
21—25 Feb. 80	World congress of paediatric surgery	Bombay	
25—8 Mar. 80	Maintenance management	Hyderabad	Admn Staff College of India
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February—80	International seminar on patents	Hyderabad	Regional Res Laboratory
February—80	Symposium on circuits and systems	Madras	Inst of Electronics & Telecommunication Engineers
6—8 Mar. 80	Seminar on operational research and decision making	Delhi	Delhi University
6—9 Mar. 80	26th All India Library Conference	Delhi	National Book Trust
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28 Apr—3 May 80	Workshop on aspects of the structure and conformation of biomolecules.	Bangalore	Indian Inst of Science
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12 Mar—14 June 80	Summer Institute in English	Calcutta	Calcutta University
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May 1980	Symposium on computers and their control	Lucknow	Inst of Electronics & Telecommunication Engineers.

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Computers			
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Education			
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Sociology			
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1. **Acharya, Debipada.** Some problems of thermoelastic stress-wave in solids. University of Kalyani.

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3. **Barnwal, S.P.** On certain problems in shock waves in dusty medium. University of Gorakhpur.

4. **Bhat, Muralidhara Venugopala.** On some theoretical aspects of lubrication. M.S. University of Baroda.

5. **De, Sudhansu Kumar.** Some aspects of wave and vibrations in solids. University of Kalyani.

6. **Garg, Kailash Chandra.** Complementary programming. Meerut University.

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10. Satyanarayanamurty, Akella. Random power series and Steinhauss Theorem in one and several complex variables. Andhra University.

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9. Nikumb, Suwas Krishna. Fabrication of nitrogen laser, pumped dye laser and its application to the study of two photon absorption in anthracene crystal. University of Poona.

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11. Roy, Amulya Chandra. Scattering of electrons from complex atoms. University of Kalyani.

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13. **Sharma, Shiv Dutta.** Studies in molecular vibrations and electronic and vibrational spectra of some polyatomic molecular ions. Meerut University.

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19. Patil, Tatyarao Funjaji. *Biology of Diplodisuc mehrai* Pande, 1937. Marathwada University.

20. Saha, Salil Kumar. Studies on the aphids, (Homoptera: Insecta) of Nagaland. University of Calcutta.

21. Sinha, Vijendra Bahadur. Newer facets of investigation in the immunity in experimental cholera. Kanpur University.

22. Srivastava, Prabodh Narain. Studies on the blood of some freshwater animals with particular reference to the effect of pollution. University of Gorakhpur.

23. Vijayakumari, K. Physiological effects of scorpion. (Heterometrus fulvipes) venom on some selected tissues of Guinea pig. Sri Venkateswara University.

Medical Sciences

1. Bandyopadhyay, Bitanbindu. Studies on serum amylase in health and in diseases in Indians. University of Calcutta.

2. Kate, Sudam Laxman. Study of enzyme pseudocholinesterase and other genetic markers in various communities of Maharashtra. University of Poona.

3. Samanta, Amalendu. Evaluation of man's performance in manual handling of loads. University of Calcutta.

4. Tazeen Mahmood. Study of glycolytic control mechanisms in lung tissue. University of Delhi.

5. Venkateswara Rao, Malladi. Chemical and biological studies on some plant polysaccharides. Andhra University.

Agriculture

1. Abd El-Latif; Latif Ibrahim. Studies on the response of berseem to phosphorus at various fertility levels of nitrogen and potassium. Indian Agricultural Research Institute, Delhi.

2. Anwer, *Mohammad Mujeebuddin. Heterosis* in tomato, lycopersicon esculentum Mill with special reference to fruit quality. Indian Agricultural Research Institute, Delhi.

3. Babrekar, Prabhakar Gajanan. Changes in soil properties in a long term multiple cropping system. Indian Agricultural Research Institute, Delhi.

4. Bhadauria, Surendra Singh. Toxicity factor in acid laterite soil affecting growth and yield of wheat. I.I.T Kharagpur.

5. Bharatiya, Sadashiv. An economic analysis of dry-land farms in District Banda of Bundelkhand Region, Uttar Pradesh. Kanpur University.

6. Bodhade, Suresh Namdeorao. Exploration of certain chemicals for their activity as chemosterilants against pests of agricultural importance. Punjabrao Krishi Vidyapeeth.

7. Chandele, Ajitsingh Gyansingh. Ecological studies on the short-tailed mole rat, Nesokia Indica Gray and its control. Indian Agricultural Research Institute, Delhi.

8. Deshmukh, Prataprao Shamrao. Influence of moisture stress and cycocel on growth, yield and biochemical changes in *sunflower Helianthus annuus L. Indian Agricultural Research* Institute, Delhi.

9. Dixit, Madan Lal. Effect of zinc, phosphorus, sulphur, boron and moisture on yield, nutrient uptake and quality of seed in mustard, Brassica juncea L. Czern & Coss. Haryana Agricultural University.

10. Galgalikar, Vithal Digambarpant. Critical assessment *of impact of post independence economic development on* a remote village in Vidarbha. Punjabrao Krishi Vidyapeeth.

11. Ganguly, Sudershan. Changes in polyphenol oxidase activity from resistant and susceptible tomato varieties inoculated with the rootknot nematode, Meloidogyne incognita. Indian Agricultural Research Institute, Delhi.

12. Gupta, Gajanand. Zinc diffusion in soils as affected by chelating agents. Indian Agricultural Research Institute, Delhi.

13. Gurunadha Rao, Y. Response of aestivum and durum varieties of wheat to different levels of nitrogen under limited and adequate irrigation situations. Indian Agricultural Research Institute, Delhi.

14. Harihar Prasad. Studies on the effects of ionizing radiation on the oriental fruit fly, Dacus dorsalis Hendal. Indian Agricultural Research Institute, Delhi.

15. Ibrahim, Samah Imam. Studies on acetylcholinesterase from the desert locust, Schistocerca gregaria Forsk. Indian Agricultural Research Institute, Delhi.

16. Kapoor, Amar Singh. Preliminary investigation on the genetics of slowstem rusting in wheat. Indian Agricultural Research Institute, Delhi.

17. Kapoor, Kuldip Singh. Epidemiology development of sclerotinia rot of seed cauliflower. Indian Agricultural Research Institute, Delhi.

18. Khurdiya, Dilpat Singh. Nature and retention of anthocyanin pigments in phalsa, Grewia subinaequalis L. juice. Indian Agricultural Research Institute, Delhi.

19. Khuspe, Suryakant Sitaram. (I) Cytotaxonomic studies in the genus Carica L. and Cytogenetical studies in the interspecific Carica L. hybrids; (II) Embryological studies in C. papaya L., C. cauliflora Jacq. and use of embryoculture technique to obtain their hybrid; and (III) Screening of Carica L. species, interspecific hybrids and interspecific grafts for papaya leaf mosaic virus. Mahatma Phule Krishi Vidyapeeth.

20. Kodmelwar, Ramdas, Vithobaji. Studies on phyllosphere micro-organisms of sorghum and cotton. Punjabrao Krishi Vidyapeeth.

21. Koul, Roop Kishen. Hydraulics of moisture front advance in drip irrigation. Indian Agricultural Research Institute, Delhi.

22. Kubde, Vasant Ramarao. A study of the correlates of work involvement and job performance of he personnel of farm and home units of All India Radio. Indian Agricultural Research Institute, Delhi.

23. Majumdar, Pankaj Kumar. Genetical studies on yield, protein content and phenolase activity to wheat. Indian Agricultural Research Institute, Delhi,

24. Mannikandan, P. Phosphate sorption in some red, laterite and associated soils of Mysore plateau. Indian Agricultural Research Institute, Delhi.

25. Mohamed Rizk, Mohamed Azmey. Response of lentil, Lens esculenta L. to irrigation and phosphorus and their residual effects on maize. Indian Agricultural Research Institute, Delhi.

26. Mukewar, Anand Madhaorao. Breeding new male sterile lines and restorers in sorghum and judge their combining abilities to secure high yielding hybrids. Punjabrao Krishi Vidyapeeth.

27. Munda, Gour Chandra. Growth, yield and nutrient uptake pattern of hybrid bajra, Pearl millet (Pennisetum typhoides Stapf and Hubb) as influenced by nitrogen and phosphorus fertilization. Indian Agricultural Research Institute, Delhi.

28. Nad, Basanta Kumar. Sulphur and magnesium requirement of some legumes and oilseeds crops grown in a sequence. Indian Agricultural Research Institute Delhi.

29. Ohri, Nand Kishore. Analysis of long-term experiments. and experiments on crop rotations. Indian Agricultural Research Institute, Delhi.

30. Palodhi, Partha Ranjan. Some important fundamental and applied aspects of Fusarium wilt of cucurbits. Indian Agricultural Research Institute, Delhi.

31. Pande, Pooran Chandra. Biochemical basis of grain development and nutrient status of developing tiller in wheat. Indian Agricultural Research Institute, Delhi.

32. Pandey, Sachchida Nand. A study of communication patterns under the training and visit system of agricultural extension in the Chambal Command Area Development Project of Rajasthan. Indian Agricultural Research Institute. Delhi.

33. Parkash, Vijay Inder. Regulation of starch biosynthesis in notch-2 mutant and its parent NP 113 barley during grain development. Indian Agricultural Research Institute, Delhi.

34. Patil, Krishnakant Jagannath. Taxonomic studies on plant parasitic and free-living nematodes from Vidarbha Region of Maharashtra. Indian Agricultural Research Institute, Delhi.

35. Pawar, Chandrashekhar Sitaram. Study on efficacy of organo-phosphorus insecticides against Cadra cautella (Walker) and Corcyra cephalonica (Staint). Indian Agricultural Research Institute, Delhi.

36. Phokela Amrit. Studies on the carboxylesterases CE. C 3.1.1.1.) of aphids. Indian Agricultural Research Institute, Delhi.

37. Pushpadas, M. V. Utilisation of phosphorus from indigenous rockphosphates by legumes, as affected by soil and plant factors. Indian Agricultural Research Institute, Delhi.

38. Raghavulu, P. Effect of mulches and anti-transpirant sprays on the moisture conservation and water use efficiency by sorghum under *dryland conditions*. Indian Agricultural Research Institute, Delhi.

39. Raghuveer, P. Chandra. Carbon dioxide compensation concentration in relation to growth, development, photo-respiratory enzymes and moisture stress in peas, Pisum sativum L. and sorghum, Sorghum vulgare Pers. Indian Agricultural Research Institute, Delhi.

40. Saher Anwer Ahmed. Studies on some physiological aspects of salt tolerance in grapes. Indian Agricultural Research Institute, Delhi.

41. Sahu, Gandharba Charan. Clay characterisation in relation to pedogenesis of broad soil groups of Orissa. Orissa University of Agriculture and Technology.

42. Salimath, Prakash Mrityunjaya. Genetic diversity, combining ability and selection response in chickpea, Cicer arietinum L. Indian Agricultural Research Institute, Delhi.

43. Sarkar, Ashim Kumar. *Efficiency of zinc utilisation* by rice grown under flooded condition. Indian Agricultural Research Institute, Delhi.

44. Sesha Reddy, Konda. A study on the irrigation requirement of wheat under early, normal and late sown conditions. Indian Agricultural Research Institute, Delhi.

45. Shadeque, Abu. Effect of cycocel (CCC) on growth, yield and quality of potato, solanum tuberosum L. Haryana Agricultural University.

46. Sharma, Ghanshyam Das. Studies on phenotypic stability and genetic architecture in forage sorghum. Haryana Agricultural University.

47. Sharma, Pradeep Kumar. Dynamics of water and phosphorus in soils under different evaporation potentials. Indian Agricultural Research Institute, Delhi.

48. Shinde, Nagnath Narayanappa. Studies on sex forms in muskmelon, Cucumis melo L. Indian Agricultural Research Institute, Delhi.

49. Sreenivasa, Raju, Akam. Relative efficiency of utilization of soil and fertilizer phosphorus by some cereal crops as influenced by method of application. Indian Agricultural Research Institute, Delhi.

50. Subba Rao, Annangi. Effect of intensive cropping and fertilizer use on crop yield, nutrient uptake and changes in soil chemical properties. Indian Agricultural Research Institute, Delhi.

51. Subbaratnam, Gadamsetty Venkata. Studies on the control of insect pest complex of brinjal with special reference to shoot and fruit borer, Leucinodes orbonalis Guenee. Indian Agricultural Research Institute, Delhi.

52. Tarafdar, Jagdis Chandra. Studies on clay-enzyme complexes Indian Agricultural Research Institute, Delhi.

53. Tripathi, Diwakar Prakash. Characterisation of diverse cytoplasmic genetic male steriles in sorghum, Sorghum bicolor L. Moench. Indian Agricultural Research Institute, Delhi.

54. Vasisht, Amit Kumar. On PS sampling schemes through multi-stage designs. Indian Agricultural Research *Institute, Delhi.*

55. Verma, Shaitan Singh. Studies on heterosis breeding in cauliflower. Indian Agricultural Research Institute, Delhi.

Veterinary Science

1. Chaturvedi, Girish Chandra. Studies on the immunological response of cow calves to Salmonella infection. Haryana Agricultural University.

2. Dogra, Subhash Chander. Immunological behaviour of attenuated and inactivated buffalopox virus. Haryana Agricultural University.

3. Kalra, Satish Kumar. Studies on immunogenicity of sheep pox virus. Haryana Agricultural University.

4. Lahon, Dalip Kumar. Experimental broncho-pulmonary surgery in buffalo calves. Haryana Agricultural University.

5. Mathur, Chaitan Raj. Studies on the calcium and phosphorus requirement of caged layers. Andhra Pradesh Agricultural University.

6. Pargaonkar, Damodar Rangrao. Studies on bovine gynaecology: Fertility and problems of reproduction in native and crossbred cattle. Punjabrao Krishi Vidyapeeth.

7. Ramakrishnan, A. Studies on the estimation of metabolizable energy of poultry feed ingredients. Andhra Pradesh Agricultural University.

Additions to AIU Library

Adiseshiah, Malcolm S. *Quinquennial of the university's 165 colleges 1971-76.* Madras, University of Madras, 1977. iv, 40p.

Anderson, Gary J. and Lauwerys, Joseph A. *Institutional leadership for educational reform: The Atlantic Institute of Education.* Paris, Unesco, 1978. 49p.

Australian Vice-Chancellors' Committee, Canberra. *Appointment of staff: Fractional appointments.* Canberra, Author, 1979. 18p.

———. *Maternity leave.* Canberra, Author, 1979. 19p.

———. *Overseas leave: Non-academic staff.* Canberra, Author, 1979. 10p.

———. *Recreation leave: Academic and non-academic staff.* Canberra, Author, 1979. 13p.

———. *Retirement of staff.* Canberra, Author, 1979. 21p.

Bowen, Howard R. *Investment in learning: The individual and social value of American higher education.* San Francisco, Jossey-Bass, 1977. xvi, 507p.

Carnoy, Martin. *Education and employment: A critical appraisal.* Paris, Unesco: IIEP, 1977. 91p.

De Gruijter, Dato N.M. and Van der Kamp, Leo J. Th. *Advances in Psychological and educational measurement.* London, Wiley, 1976. x, 320p.

Gupta, Shakti M. *Birbal Sahni.* Delhi, National Book Trust, (c 1978) viii, 87p.

Harnqvist, Kjell. *Individual demand for education: Analytical report.* Paris, OECD, 1978. 12[illegible] p.

Holzner, Burkart and Marx, John H. *Knowledge application: The knowledge system in society.* Boston, Allyn and Bacon. (c 1979) xxiii, 388p.

India. Ministry of Education and Culture. *National adult education programme: The first year.* Delhi, Author, 1979. 40p.

India. Ministry of Education and Social Welfare. *Summary of the Report of the Working Group on Adult Education for Medium Term Plan, 1978-83.* Delhi, Author, 1978. 30p.

International Council for Adult Education, Ottawa. *World of literacy: Policy research, and action.* Ottawa, International Development Research Centre, 1979. 128p.

Mayhew, Lewis B. *Legacy of the seventies: Experiment, economy, equality, and expediency in American Higher Education.* San Francisco, Jossey-Bass, 1977. xvi, 366p.

M'Bow, Amadou Mahtar and others. *Suicide or survival?: The challenge of the year 2000.* Paris, Unesco, 1978. 192p.

Mortimer, Kenneth P. and McConnell, T.R. *Sharing authority effectively: Participation, interaction, and discretion.* London, Jossey-Bass, 1978. xx, 322p.

Myers, D.M. *University staffing in a static situation: An inquiry for the Australian Vice-Chancellors' Committee.* Canberra, Australian Vice-Chancellors' Committee, 1979. iv, 29p.

Nakayama, Shigeru. *Characteristics of scientific development in Japan.* Delhi, Centre for the Study of Science, Technology & Development, C.S.I.R., (c 1977) vi, 64p.

Paris, O.E.C.D. *Science and technology in the People's Republic of China.* Paris, Author (c1977) 216p.

———. CERI. *Environmental education at university level: Trends and data.* Paris, Author, 1973. 320p.

———. *Management information systems for higher education.* Paris, Author, 1977, 353p.

Rahman, A. *Science policy studies in India: A status report.* Delhi, Centre for the Study of Science Technology & Development, C.S.I.R. & ICSSR, 1977. 137p.

Rahman, As and others. *Science policy studies: A survey o research in advanced countries on developing countries.* Delhi, Centre for the Study of Science, Technology & Development, C.S.I.R., 1979. 154, viiip.

Unesco. *Cultural content of education.* Paris, Author, 1979. 100p.

Venkata Rao, B.V., ed. *Universities and their social relevance.* Bangalore, University of Agricultural Sciences, 1978. 71p.

Vermilye, Dyckman W., ed. *Relating work and education.* San Francisco, Jossey-Bass, 1977, xix, 282p.

Wilson, Logan. *American academics: Then and now.* New York, Oxford University Press, 1979. 300p.

Let Us Have More Universities

(*Continued from page* 134)

entire rules, regulations and procedures. There should be adequate library and laboratory and workshop facilities. Even agricultural farms, ponds etc. could be there. Teachers should come from the community as well and not all need be on full-time pay-roll of the universities. Students should have the freedom to pursue subjects of their choice for three years for the first degree and then for another two years for the second degree. Examinations being decentralised and student centred will no longer be a problem. The problem will be for the teachers. They will have to give sufficient time to the students not in teaching but in helping each student grow.

Standards will not fall. In the beginning there may be some lowering of standards, here and there, but soon committees may be set up to discuss experiences and develop new ways of teaching and learning. One has to accept that the western model as we have practised it so far does not work any more. We need to develop not one model, but several models in keeping with our traditions and cultures.

I have mentioned only two problems which beset our universities. There are many other problems which could have been discussed. But I think a discussion of those other problems will also lead us to find a solution in the same direction as I have indicated in this brief paper. ☐

INDIAN INSTITUTE OF TECHNOLOGY,

BOMBAY P.O. I.I.T., POWAI, BOMBAY-400 076.

Advertisement No. 994/80

Applications on plain paper are invited from the citizens of India for filling up the following posts. Persons employed in Govt/Semi Govt. organization or Educational Institution should apply through proper channel. Crossed Indian Postal Order for Rs. 3/- (75 paise *for SC/ST) for the posts at Sr. No. 1, 2,* 3, and 4 and Re 1/- (25 paise for SC/ST) for the posts at Sr. No. 5 and 6, payable to the Registrar, I.I.T. Bombay should be enclosed. Preference will be given to candidates belonging to Scheduled Castes/Scheduled Tribes and ex-servicemen. Age preferably below 30 years relaxable in deserving cases. The posts carry allowances such as D.A., H.R.A., C.C.A. etc. as per the rules of the Institute (as admissible to Central Government employee stationed at Bombay).

POST:

1. **Foreman**

Scale of pay: Rs. 550-25-750-EB-30-900

Qualifications and Experience

a) *Aeronautical Engineering Department*

Diploma in Mechanical/Electrical Engineering plus seven years' workshop experience, *OR* regular apprenticeship for 4 to 5 years in an Industrial Establishment of repute plus seven years' shop experience. Candidate should have proven ability to manage the section, prepare estimate of material, machining time etc. He should also have at least one or two years' experience in handling specialized fabrication jobs such as components of low speed wind tunnels (wooden structure), high speed wind tunnel (metal structure, nozzles, test section etc.), wind tunnel models, structural test rig etc. Good acquaintance of maintenance of *workshop machinery* is essential.

b) *Mechanical Engineering Department*

Post (*i*)

Diploma in Mechanical Engineering About 7 years' workshop experience in an industrial establishment. The candidate should have a thorough knowledge of operating and maintaining different machine tools such as lathes, shapers milling machines, etc. A degree holder in Mechanical Engineering with less experience may also be considered.

Post (ii)

Diploma in Mechanical Engineering. About 7 years' experience in the operation and maintenance of power plant equipment, blowers, pump, compressors, boilers, etc. A degree holder in Mechanical Engineering with less experience may also be considered.

2. **Senior Technical Assistant**

Scale of Pay: Rs. 550-25-750-EB-30-900.

Qualifications and Experience

(i) *Geology, Civil Engg. Department*

M Sc. (1st Class) or equivalent (60%). Should have some experience in laboratory work in ore microscopy, mineralogy and petrology.

(ii) *Mechanical Engg. Dept.*

First Class Diploma in Electronics or M Sc. (Nuclear Physics) or M Sc. (Electronics). 2 to 3 years of Industrial experience in design, fabrication and maintenance of Nucleonic Instruments like Ionisation Chamber, Gama Ray Spectrometer, Power Amplifier, Scalars etc. or must have worked in R and D Section of Instrument manufacturers or Isotope utilisation laboratory. Post-graduate Diploma in Radiation Physics from BARC or similar Diploma from Bombay University or M.Sc. in Applied Radiation Physics from any university followed by 2 or more years of field experience.

Candidate with less qualifications may be considered for the post of J.T.A.

3. **Junior Technical Assistant**

Scale of Pay: Rs. 425-15-500-EB-15-560-20-700.

Qualifications and Experience

(i) *Chemistry Department*

M.Sc. in Chemistry (preferably First Class) with Mathematics or Physics at B Sc. level. One year experience in Teaching/Research Laboratory desirable.

(ii) *Mathematics Department*

At least 2nd Class B.Sc. in Mathematics/Statistics with one or two years experience in working in any numerical/statistical laboratory.

(iii) *Central Library*

B.Sc. with Degree in Library Science. Experience of working in Documentation, Information Retrieval and other activities in a library of repute. Preference will be given to the candidates with higher qualifications or found otherwise suitable.

(iv) *Industrial Design Centre*

Diploma in Mechanical Engineering. Minimum 3 years experience in Proto-type work in light engineering industry. Should be capable of doing shop-floor supervision. Knowledge of vendor development work and documentation of technical matters will be added advantage.

(v) *Electrical Maintenance Section*

Degree or Diploma in Electrical Engineering. Should preferably hold the first class supervisors licence issued by the Industries and Labour Department of Govt. of Maharashtra. Some experience regarding maintenance of electrical installations of laboratory workshop and residential buildings, distribution systems, pumps etc. desirable. The person should be able to lead a team of 20-25 persons working under him.

4. **Junior Research Assistant** (Temporary post, Chemistry Department)

Scale of pay: Rs. 425-15-500-EB-15-560-20-700.

Qualifications and Experience

M.Sc. degree in Chemistry (preferably First Class) with Mathematics or Physics at B.Sc. level. One year experience in Teaching/Research Laboratory desirable. Candidates appointed as J.R.A. if found suitable may be given an opportunity to register for Ph.D. Programme.

5. **Draughtsman Grade II** (Chemical Engg. Department)

Scale of Pay: Rs. 330-10-380-EB-12-500-EB-15-560.

Qualifications and Experience

Diploma in Mechanical Engineering with 2 years' experience in a Drawing Office. Experience in Drawing of Chemical Plants, equipment, piping etc. is desirable

OR

S.S.C. with Mathematics and English. Certificate in Draughtsmanship after completion of 2-year course in Mechanical Draughtsmanship from an I.T.I. or equivalent. 3 years' experience as a draughtsman in Engineering Establishment.

6. **Garden Chaudhary** (Estate Office)

Scale of Pay: Rs. 260-6-326-EB-8-350.

Qualifications and Experience

Diploma in Agriculture from recognized University or Institution with three years' course leading to a diploma with horticulture as a special subject. Two years' experience in maintenance of lawns and perennial trees shrubs, seasonal flowering plants. Ability to control labour.

Knowledge of Govt. rules, regulations connected with the work executed under his supervision.

Candidates who possess the requisite qualifications and experience may apply stating name, date of birth, details of academic qualifications and experience with copies of certificates, testimonials etc. to the Registrar, Indian Institute of Technology, Powai, Bombay-400 076 on **or before 5th April 1980.**

PUNJABI UNIVERSITY
PATIALA

Applications are invited for two posts of PROFESSOR OF ECONOMICS (Grade Rs. 1500-2500). One of these two posts is up to 31-10-1984 but is likely to continue.

1. These posts will be filled as per qualifications prescribed by the UGC, details of which would be supplied along with the application form.
2. Only those candidates who fulfil the prescribed qualifications need apply.
3. The required areas of specialization are:
   - (i) Economic Theory including its mathematical aspects;
   - (ii) Economic Growth; Development; and Planning Theory and Policy;
   - (iii) Monetary and Fiscal Theory and Institutions;
   - (iv) International Economics;
   - (v) Industrial Organization; Technological Change; and Industry Studies;
   - (vi) Urban and Transport Economics.

Higher start within the grade admissible, depending upon the ability and experience of the candidate. House rent and dearness allowance, provident fund and medical facilities according to the University rules.

Applications, complete in all respects, on the prescribed form accompanied by a crossed postal order of Rs. 5/- (Rs. 2/- for candidates belonging to Scheduled Castes/Tribes and Backward Classes) drawn in favour of the Registrar, Punjabi University, Patiala-147 002 should reach the University by **20.3 80**. The forms can be had from the Superintendent (Establishment) by sending a self-addressed envelope of the size 25×10 cms. stamped with 30 paise postage which should be superscribed at the top in capital letters 'REQUEST FOR APPLICATION FORM FOR THE POST OF PROFESSOR OF ECONOMICS'.

Persons already in service should apply through proper channel. Government servents not in a position to submit their applications through proper channel by the due date should submit an advance copy to be followed by a regular application through proper channel by **22-3-80**.

REGISTRAR

KASTURBA HEALTH SOCIETY

Mahatma Gandhi Institute of Medical Sciences

P.O. Sevagram, Wardha

Applications are invited for the following posts in the prescribed forms available from the office of the Principal Mahatma Gandhi Institute of Medical Sciences, Sevagram-442102, on payment of

(*Continued on next page*)

Indian school of Mines

DHANBAD

Advt.No. 420002/80 February 21, 1980

I. Indian School of Mines, a 'deemed University' under UGC Act invites applications for the following faculty positions :

Six Professors

One in Deptt of	Geology with specialisation in Structural Geology
One in Deptt of	Petroleum Engg with specialisation in Chemical Engineering
One in Deptt of	Mining Engg for the IEL Chair in Tunnelling and Shaft Sinking
One in Deptt of	Electronics and Instrumentation with specialisation in Electronics
One in Deptt of	Electronics and Instrumentation with specialisation in Instrumentation
One in Deptt of	Engineering and Mining Machinery with specialisation in Drilling Engineering.

(b) **Four Asstt Professors**:

One in Deptt of	Petroleum Engg with specialisation in Chemical Engineering
One in Deptt of	Engg and Min Mach with specialisation in Mechanical Engineering
One in Deptt of	Geology with specialisation in Engg Geology
One in Deptt of	Mining Engg with specialisation in Rock Mechanics.

(c) **Six Lecturers**:

One in Deptt of	Industrial Engineering with specialisation in Industrial Engg/Management
One in Deptt of	Engg and Min Mach with specialisation in Mechanical Engineering
One in Deptt of	Engg and Min Mach with specialisation in Electrical Engineering
One in Deptt of	Geology
One in Deptt of	Chemistry, Fuel and Metallurgy with specialisation in Mineral Engineering.

—All posts are permanent or likely to become permanent.

PAY SCALE AND UPPER AGE LIMIT;

Professors	Rs. 1500-2500/-	(50 years)
Asstt Professors	Rs. 1200-1900/-	(40 years)
Lecturers	Rs. 700 1600/-	(35 years)

Allowances admissible as per Govt of India Rules sanctioned from time to time. Total emoluments currently amounts to Rs. 1049.50/- at the Rs. 700/- stage, Rs. 1630/- at Rs. 1200/- stage, Rs. 1930/- at the Rs. 1500/- stage and Rs. 2800/- at the Rs. 2500/- stage. Upper age limit relaxable in respect of certain specified categories of persons and for candidates otherwise considered specially suitable.

II. Specialising in the field of earth sciences and technology, Indian School of Mines conducts three B.Tech programmes (in Mining Engg. Mining Machinery and Pet Engg), two M.Sc. Programmes (in Applied Geology and Applied Geophysics), ten industry-oriented postgraduate programmes in Mining, Geophysics/Mineral Exploration/Engg Geology/Drilling Engineering/Mining and Mine Planning/Opencast Mining/Mining Machinery/Mineral Engg/Fuel Engg/Industrial Engg and Management. Two additional M.Tech Programmes (in Pet Engg and Pet Production) are expected to be started next year. M. Phil programmes in Applied Geology, Applied Geophysics and Applied Mathematics are also run.

The School has an ambitious Continuing Education/Executive Development Programme (covering about 30 courses per year), Institutional consultancy.

III. Detailed information for candidates and prescribed application form are obtainable from the Registrar, Indian School of Mines, Dhanbad-826004, on sending a self-addressed envelope of the size 30 cm x 12 cm affixed with postal stamps of the value of Rs. 3.45 paise. Applications in the prescribed application form complete in all respects should reach the undersigned on or before **1st April 1980.**

IV. Candidates who have already applied in response to our earlier advertisement need not apply again.

S.P. VARMA
REGISTRAR

O/ISM/80

(*Continued from previous page*)

Rs 2/- in cash or by Indian Postal Order drawn in favour of Kasturba Health Society, Sevagram.

Completed application forms with attested copies of testimonials should reach the Principal, M.G.I.M.S., Sevagram-442102 under College Section and the Medical Superintendent, Kasturba Hospital for posts under Hospital Section on or before 25th March, 1980.

College Section:

1. **Professors of:**
   (a) Pathology, (b) Microbiology, (c) SPM, (d) Medicine, (e) Paediatrics (f) Ophthalmology, (g) Obst. and Gynaec, (h) Radiology. (i) Additional Professor of SPM.
2. **Associate Professors of:**
   (a) Anatomy, (b) Physiology, (c) Pathology (d) SPM, (e) Medicine, (f) Surgery, (g) Anaesthesiology, (h) Ophthalmology, (i) Obst. and Gynaec. (j) Radiology.
3. **Readers in:**
   (a) Anatomy, (b) Physiology, (c) Pharmacology, (d) Pathology, (e) Microbiology, (f) Blood Bank/Haematology, (g) Forensic Medicine, (h) SPM, (i) Medicine, (j) Infectious Diseases, (k) Skin and V.D., (i) Psychiatry, (m) Orthopaedics, (n) ENT, (o) Anaesthesiology (p) Ophthalmology, (q) Radiology.
4. **Lecturers in:**
   (a) Physiology, (b) Pharmacology, (c) Blood Bank, (d) Forensic Medicine, (e) SPM (Statistics and Demography), (f) Medicine, (g) Paediatrics, (h) Infectious Diseases, (i) Skin & V.D., (j) Psychiatry, (k) Surgery, (l) ENT, (m) Dentistry, (n) Anaesthesiology, (o) Ophthalmology. (p) Obst. & Gynaec. *(q) Radiology.*

Qualifications and Experience:

Qualifications and experience for all the above posts are as prescribed by the Medical Council of India. Candidates with lesser qualification and experience may be considered if suitable candidates are not available.

Pay Scales:

Professors; Rs 1500-60-1800-100-2000-125/2-2500/- plus 40% N.P.A. and D.A.

Associate Professors/Readers: Rs 1200-50-1300-60-1900 plus 40% N.P.A. and D.A.

Lecturers: Rs 700-40-1100-50-1600/- plus 40% N P.A. and D.A.

5. Epidemiologist: Pay Scale: Rs 680-40-1000-EB-50-1500/- plus 40% N.P.A. and D.A. Qualification and Experience: As prescribed by Medical Council of India.
6. Sanitary Inspector: *Pay* Scale: Rs 290-10-390-15-465 Extn-15-540/- plus D.A. Qualification and Experience: Graduate with Diploma in Sanitation from a recognised Institute. Candidates with previous experience in similar capacity will be preferred.
7. Senior Accountant: Pay Scale: Rs 500 20-700-25-900/- plus D.A. Qualification and Experience: Master's Degree in Commerce of a recognised University with 10 years' experience in similar capacity. Candidates appeared for S.A.S./Intermediate C.A. Examination will be given preference.
8. Supervisor (Civil), Pay Scale: Rs 290-10-390-15-465-Extn-15-540 plus D.A. *Qualification* and *Experience:* Matriculate with Diploma in Civil Engineering from a recognised Institute or 5 years' experience in construction work. *Preference will be* given to the candidates having sufficient experience in fabrication/precasting of concrete work. Qualification can be relaxed if suitable candidate is not available.
9. Assistant Engineer (Electrical). Pay Scale: Rs 600-30-750-EB-40-1150/- plus D.A. Qualification and Experience: Degree in Electrical Engineering with three years' experience. Should have experience in repair, maintenance and erection of electrical Installations house wiring, high-tension and low-tension switchgears, power distribution water supply and maintenance and repair of pipelines. For Para-medical Course (purely temporary post).
10. Clerk-cum-Store Keeper. Pay Scale: Rs 260-10-390-15-420-Extn-15-495 plus D.A. Qualification and Experience: Graduate with English typing @40 w.p.m:

Hospital Section:

1. Hospital Administrator. Pay Scale: Rs 600-30-750-EB-40-1150/- plus D.A. Qualification and Experience: Graduate of a recognised University with Degree/Diploma in Hospital Administration: Should have 3 year's experience in a supervisory capacity preferably in a teaching hospital. Requirements regarding experience relaxable *in case of exceptionally* suitable candidates. Salary negotiable in respect of experienced candidate.
2. Medical Record Technician. Pay Scale: Rs 365-15-500-10-660-Extn-20-760/- plus D.A. *Qualification* and Experience: Matric with Medical Record Technician training. Candidates having experience will be preferred.
3. Compounder. Pay Scale: Rs 290-10-390-15-465-Extn-15-540/- plus D.A. Qualification and Experience: D. Pharm. Registration as a Pharmacist. Candidates having experience will be preferred.
4. Matron. Pay Scale: Rs 600-30-750-40-950/- plus D.A. Qualification and Experience: B.Sc. Nursing with experience in Administration in a five hundred-bedded hospital. Candidates with previous experience in a similar capacity will be preferred. If a suitable candidate is not available the criteria can be relaxed at the discretions of Selection Committee.
5. Ward Sister/Ward Master. Pay Scale: Rs 365-15-500-20-660-Extn-20-760 plus D.A. Qualification and Experience: Registered Nurse Midwife with minimum 5 years' experience as Staff Nurse in a two hundred-bedded hospital. If suitable candidate is not available, the criteria can be relaxed at the discretion of Selection Committee.
6. Biochemist. Pay Scale: Rs 600-30-750-EB-40-1150/- plus D.A. Qualification and Experience: At least *M.Sc. (Biochemistry) of a recognised*

University. A candidate having Research experience in addition to experience in Hospital Biochemistry Laboratory will be given preference.

7. Physiotherapist. Pay Scale: Rs 395-15-500-20-700-Extn-20-800/- plus D.A. Qualification and Experience: B.Sc. (P.T.). Candidate with previous experience will be preferred.

8. Audiometrician and Speech Therapist. Pay Scale: Rs 395-15-500-20-700-Extn-20-800/- plus D.A. Qualification and Experience: B.Sc. in Speech and Hearing or B.Sc. in Audiology and Speech or Higher Secondary/Matric or its equivalent with Diploma in Clinical Technology (Audiometry) from a recognised Institut/University. Candidates having higher qualification and experience of operating audiometric fitting and servicing of hearing aids will be preferred.

9. Refractionist. Pay Scale: Rs 365-15-500-20-660-Extn-20-760/- plus D.A. *Qualification and Experience*: Intermediate with Diploma in Refraction and Optometry from recognised Institute. Candidates with previous experience will be preferred.

10. Clerk-cum-Store Keeper. Pay Scale: Rs 260-10-390-15-420-Extn-15-495 plus D.A. Qualification and Experience: Matriculate with English/Hindi typing speed @40 w.p.m. Graduate or a candidate having previous experience in a reputed organisation will be preferred.

11. Home Sister. Pay Scale: Rs 365-15-500-20-660-Extn-20-760/- plus D.A. Qualification and Experience: Diploma in General Nursing & Midwifery Certificate with 5 years' experience as staff Nurse in a 500-bedded hospital.

12. Public Health Nurse. Pay Scale: Rs 365-15-500-20-660-Extn-20-760 plus D.A. Qualification and Experience: Diploma in Public Health Nursing from a recognised Institute. Candidates having previous experience will be preferred.

13. Assistant Dietician. Pay Scale: Rs 335-15-500-20-580-Extn-20-680 plus D.A. Qualification and Experience: Graduate in Home Science with Diploma in *Dietetics from a recognised* Institute. Candidate with previous experience will be preferred. In case suitable candidate is not available, the criteria for selection may be relaxed.

14. Paediatric Nurse. Pay Scale: Rs 365-15-500-20-660-Extn-20-760 plus D.A. Qualification and Experience: Diploma in General Nursing and Midwifery Certificate and must have passed the Certificate Course in Paediatric Nursing with minimum 5 years experience as a Staff Nurse in a two hundred-bedded hospital.

Note: Age limit for all non-teaching posts (College and Hospital) is below 30 years. It is relaxable in case of exceptionally suitable and experienced candidates.

UNIVERSITY OF BOMBAY

Applications are invited in the prescribed form for the following posts in the University:

	Post	**Department**
†1.	Sir Walchand Hirachand Professor/Reader in Transport Economics.	Economics
*2.	Professor of Planning and Development (temporary for the period ending 31st March, 1983)	-do-
*3.	Two Readers in Industrial Economics/Public Finance (Centre of Advanced Study)	-do-
4.	Professor of Civics & Politics	Civics & Politics
5.	Reader in Public Administration	-do-
6.	Reader	Applied Psychology
7.	Lecturer	Statistics
8.	Two Lectures	Law
9.	Professor of Chemistry	Chemistry
10.	Reader in Chemistry	-do-
11.	Lecturer in Chemistry	-do-
12.	Lecturer in Chemistry	-do-
13.	Reader	Sanskrit
*14.	Two Professors	Jamnalal Bajaj Institute of Management Studies
*15.	Reader	-do-
*16.	Reader	-do-
*17.	Reader	-do-
*18.	Two Lecturers	-do-
19.	Lecturer in Persian	Foreign Languages
*20.	Lecturer in Arabic	-do-
21.	Four Lecturers	Geography
*22.	Reader	Sindhi
23.	Professor of Business Finance	Commerce
24.	Reader in Banking	-do-
25.	Reader in Commerce	-do-
26.	Lecturer	Computer Science
*27.	Three Professors, one in each of the areas grouped as follows : (a) Plant Sciences, Animal Sciences, Microbial Sciences, Cell Biology, Development Biology and Ultrastructural Cytology; (b) Molecular Biology, Immunobiology, Genetics, Biophysics and Biological Chemistry, (c) Neurobiology, Electrophysiology; Biometry, Ecology, Ergonomics and Cybernetics in Biology.	Life Sciences
28.	Lecturer in Chemistry	Chemical Technology
29.	Lecturer in Inorganic and Physical Chemistry	-do-
††30.	Sir Dorabji Tata Reader in Pharmaceutical Chemistry	-do-
**31.	Reader in Pharmacology and Physiology	-do-

The pay-scales of the posts are :

Professor: Rs. 1500-60-1800-100-2000-125/2-2500

Reader : Rs. 1200-50-1300-60-1900 and

Lecturer: Rs. 700-40-1100-50-1600.

All posts carry the benefits of Dearness Allowance, House Rent Allowance and Compensatory Local Allowance according to the university rules. All posts, other than the temporary posts, also carry the benefits of Provident Fund and Gratuity according to the University rules. A higher starting pay may be given to persons appointed to the posts of Professor and Reader in special cases. The appointments to the posts, other than the temporary posts, *will be on probation for two years but* the probationary period may be reduced by the Executive Council in special cases. Other things being equal, preference will be given to candidates from backward classes. The posts of Lecturer are reserved for candidates belonging to scheduled castes and scheduled tribes and will be filled up by appointment of such persons only as shall satisfy the *requirements regarding qualifications*, experience etc. laid down for the posts; provided, however, that if no candidate is available from scheduled castes and scheduled tribes, the posts will be filled up by appointment of duly qualified persons from among the other candidates.

The **minimum qualifications** prescribed for the posts, other than the posts at serial numbers 30 and 31, are as under:

Professor :

An eminent scholar with published work of high quality, actively engaged in research. Ten years' experience of teaching and/or research. Experience of guiding research at doctoral level.

Or An outstanding scholar with established reputation who has made significant contribution to knowledge.

Reader : Good academic record with a Doctor's degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation *in teaching methods or* (iii) production of teaching materials. About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work.

Lecturer : (a) A Doctor's degree or research work of an equally high standard; and

(b) Consistently good academic record with 1st or high 2nd class (B in the *seven point scale*) Master's degree in a relevant subject or an equivalent degree of a foreign university.

Having regard to the need for developing interdisciplinary programmes, the degrees in (a) and (b) above may be in relevant subjects.

The Executive Council may relax any of the qualifications prescribed in (b) above provided that the selection committee is of the view that the research work of a candidate as evident either from his thesis or from his published work is of very high standard.

If a candidate possessing a Doctor's degree or epuivalent research work is *not available* or is not considered suitable, the Executive Council may appoint a person possessing a consistently good academic record (weightage being given to M.Phil. or *equivalent degree* or research work of quality) provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's degree or give evidence of research work of equivalent high standard within five years of his appointment, failing which, he will not be able to earn future increments until he fulfils these requirements.

Explanation : (1) For determining consistently good academic record, a candidate should either have an average of 55% marks at the two examinations prior to Master's degree (irrespective of the marks obtained in any of the two examinations) or 50% marks at each of the two examinations separately.

(2) For determining high second class, the mid-point between the minimum percentages of marks fixed by a University for award of second class and first class may be taken.

The **additional qualifications** prescribed for the posts at serial numbers 1 to 6 and 9 to 29 mentioned above are as under:

1. **Sir Walchand Hirachand Professor/Reader in Transport Economics**—High level of competence in theoretical *and applied Transport Economics* evidenced by substantial published research work of high quality in the areas of specialisation.

2. **Professor of Planning and Development (temporary for the period ending 31st March, 1983)**—Specialisation in techniques of planning, planning models, economic development evidenced by substantial published research work of high quality in the areas of specialisation.

3. **Two Readers in Industrial Economics/Public Finance (CAS)**—Specialisation in Industrial Economics/Public Finance, Published research work of high quality in the areas of specialisation.

4. ***Professor of Civics & Politics***—Specialisation in Political Theory. Knowledge of the Social and Political thoughts of modern India.

5. **Reader In Public Administration**—The Doctoral degree or equivalent published work must be in Politics or Public Administration. Experience of teaching must be at the post-graduate level. Experience of guiding students for the Ph D. degree. Knowledge of public administration theories and of public administration in India.

6. **Reader (Applied Psychology)**—*Specialisation in Clinical Psychology.*

9 **Professor of Chemistry**—A wide background in Organic Chemistry. Experience of teaching must be at the post-graduate level in Organic Chemistry. Independent research work of recognised merit, not connected with the degree work, *in synthetic organic chemistry* including heterocyclic chemistry, photochemistry and chemistry of natural products.

10. **Reader in Chemistry**—Experience of teaching post-graduate classes and guiding research in Organic Chemistry for at least five years. Research work of merit in Organic Chemistry.

11. **Lecturer in Chemistry**—Specialisation in inorganic Chemistry or Analytical Chemistry. Experience of research in inorganic Chemistry or Analytical *Chemistry.*

12. **Lecturer in Chemistry**—Specialisation in Instrumentation Analysis. Sufficient experience in handling UV, IR, NMR spectrophotometers and theoretical *background of spectroscopy and* spectrophotometry.

13. ***Reader** (**Sanskrit**)—A sound know*ledge of Veda and Vedangas. A sound knowledge of Vyakarana will be desirable.

14. **Two Professors (Jamnalal Bajaj Institute of Management Studies)**

(i) A high second class Bachelor's Degree in Engineering/Technology /Mathematics/Statistics/ Mathematical Economics/Commerce.
(ii) A high second class Post-graduate Degree in Commerce or Post-graduate Degree or Diploma in Management or Industrial Engineering with specialisation in Quantitative Marketing/ Productivity Management/Management Audit;
(iii) A combination of five year's *teaching experience and five years'* practical experience in industry will be considered as an alternative to ten years' teaching/research experience.

15. **Reader (for Data Processing)**—

(i) A high second class Bachelor's *Degree in Engineering/Techno*logy/Mathematics/Statistics/Mathematical Economics/Commerce.
(ii) A high second class Post-graduate Degree in Commerce or Post graduate Degree or Diploma in Management or Industrial Engineering with specialisation preferably in Computer Science, information Systems or allied areas;
(iii) Experience of Teaching and/or research must be in Systems Design and Computer Programming, Experience in industry will be considered as alternative to experience of teaching/research.

16. **Reader (for Marketing)**—

(i) A high second class Bachelor's Degree in Engineering/Technology/ Mathematics/Statistics / Mathematical Economics/Commerce;
(ii) A high second class Post-graduate Degree in *Commerce or Post-gra*duate Degree or Diploma in Management or Industrial Engineering with specialisation in Marketing;
(iii) Experience of teaching and/or research must be in the area of Marketing Experience in industry will be considered as alternative to experience of teaching/research.

17. **Reader (for Finance/Accounting)**—

(i) A high second class Master' Degree in Commerce/Management with specialisation in *Finance* OR a high second class Master's Degree in any faculty and a Diploma in Managerial Accounting OR a *high second class Master's* Degree in any faculty and CA/AICWA;
(ii) Experience of teaching and/or research must be in the area of Finance /Accounting. Experience in industry will be considered as alternative to experience of teaching/research.

18. **Two Lecturers (Jamnalal Bajaj Institute of Management Studies)**—

(i) The Master's Degree must be in Management/ Economics/ Com*merce;*
(ii) A high second class Bachelor's-Degree in Engineering/Technology/ Mathematics/Statistics/ Mathematical Economics/ Economics / Commerce and a Post-graduate Diploma in Management or Industrial Engineering OR a high second class Bachelor's Degree and CA/ AICWA and a Post-graduate Diploma in Management;
(iii) Some research work or teaching experience is desirable.

19. **Lecturer Persian**—At least five years' teaching experience at the Post-graduate level.

20. **Lecturer in Arabic**—At least five years' teaching experience at the Post-graduate level.

21. **Four Lecturers (Geography)**—For post *(i) Specialisation in Social* Geography; For post (ii) Specialisation in Physical Geography, preferably Climatology or Bio-Geography; For post (iii) *Specialisation in Thematic Cartography* or experience of Cartograhic work in any professional institution; For post (iv) Specialisation in Economic Geography and Economic *Mapping.*

22. **Reader (Sindhi)**—A wide background and general competence in the field of Sindhi language and literature; and experience of teaching degree classes.

23. **Professor of Business Finance**—

(i) A Doctor's degree in Commerce or in a related subject OR Published work of equivalent standard OR M.B.A. degree with *specialisation* in Finance OR Associate of the Institute of Cost and Works Accountan's with specialisation in Financial Management or Management Accounting OR Associate of the institute of Chartered Accountants with a Bachelor's degree in Commerce and a Diploma in Management Accounting;
(ii) Experience of guiding research for at least five years OR Experience of business or consultancy for at least five years OR Teaching experience of ten years out of which at least seven years should be at the post-graduate level or the Honours classes at the graduate level OR At least ten years' experience in busi-ness at the managerial level.

24. **Reader In Banking**—

(i) A Master's degree in Banking/ Monetary Economics;

(ii) Capacity to guide research. M.B.A degree with business or consultancy experience for at least five years will be considered as alternative to a Doctoral degree.

25. Reader in Commerce—

(i) A Master's degree in Commerce;

(ii) Capacity to guide research. M.B.A. degree with business or consultancy experience for at least five *years will be considered as alternative* to Doctoral degree.

26. Lecturer (Computer Science)—At least two years' experience of teaching or working in a research and development area related to computer science will be desirable.

27. Three Professors (Life Sciences)—

(i) A Master's degree in any of the areas of Life Sciences and a Doctor's degree of a recognised University.

(ii) A wide background in any of the subjects of Life Sciences mentioned below.

(iii) Experience of teaching must be at the postgraduate level.

(iv) Independent research work of recognised merit in any of the areas grouped as follows:

(a) Plant Sciences, Animal Sciences, Microbial Sciences, Cell Biology, Developmental Biology and Ultrastructural cytology.

(b) Molecular Biology, Immunobiology, Genetics, Biophysics and Biological Chemistry,

(c) Neurobiology, Electrophysiology Biometry, Ecology, Ergonomics and Cybernetics in Biology.

28. Lecturer in Chemistry (Chemical Techonology—Research experience in electro-chemistry surface chemistry and ability to handle sophisticated analytical instruments and to conduct practical classes in instrumental methods at the post-graduate level.

29. Lecturer in Inorganic and Physical Chemistry (Chemical Technology)—

(i) Specialisation in Surface Chemistry, Polymer Chemistry, Electro-Chemistry or Calorimetry.

(ii) Experience in lecturing and conducting advanced practical work in Physical and Inorganic Chemistry.

The **qualifications** prescribed for the posts at serial numbers 30 and 31 in the University Department of Chemical Technology are as under:

30. *Sir Dorabji Tata Reader in Pharmaceutical Chemistry—*

(a) A doctorate degree with specialisation in non-analytical aspects of Pharmaceutical Chemistry or Organic Chemistry in addition to the following: First class at B.Sc. (Tech.) (Pharmaceuticals)

Or

First Class at B.Pharm. and M.Pharm. by research.

Or

First Class at M.Pharm. by papers with specialisation in Pharmaceutical Chemistry.

Or

First Class at M.Sc. in Organic Chemistry with specialisation in Drugs.

(b) Post-doctoral research work of high quality in non-analytical aspects of Pharmaceutical Chemistry or Organic Chemistry *perferably involving* routine use of NMR.

(c) Thorough knowledge of Rea*ction Mechanisms and Stereo*chemistry with reference to Drugs and Intermediates as well as command over the use of modern tools with emphasis on NMR and Mass Spectroscopy.

(d) Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials.

(e) About five years' experience of teaching and/or research provided that at least three of *these* years were as Lecturer or in an equivalent position. This condition may be relaxed in the case of candidates with outstanding research work

31. Reader in Pharmacology and Physiology—A doctorate degree in Pharmacology after a basic degree in Pharmacy or Medicine. A record of independent research in Fundamental Pharmacology or Biopharmaceutics or in the screening and development of synthetic as well as indigenous drugs. Teaching experience in Physiology, Pharmacology and Biopharmaceutics is desirable.

Evidence of being actively engaged in (i) research or (ii) innovation of teaching methods or (iii) production of teaching materials.

About five years' experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position. This *condition may be relaxed in the case* of candidates with outstanding research work.

Eight copies of the application, in the prescribed form, should be sent in an envelope superscribed with "Application for the post of————" so as to reach the Registrar (*Teaching* Appointments Unit), University of Bombay, Bombay-400032, on or before Monday, 7th April, 1980. Candidates from abroad Andaman & Nicobar Islands and Lakshadweep may send their applications so as to reach the Registrar on or before Monday, 21st April, 1980.

Applications received after the last date will not be considered. Prescribed forms of application can be had in person, free of charge, from the 'Teaching Appointments Unit, Registrar's Office' (Room No. 110), University of Bombay, Fort, Bombay-400032.

Requests for supply of a set of eight prescribed forms by post should be made sufficiently in advance with a self-addressed stamped (Rs.1.80) envelope of the size of 27 x 12 cms.

Candidates should send with every application a crossed indian Postal Order or a crossed Demand Draft on a scheduled bank for Rs. 10/-drawn in favour of the Registrar, University of *of Bombay, payable at* Bombay, as application fee. Candidates who apply for more than one post should send separate applications along with the requisite fee by means of a crossed Indian Postal Order/Demand Draft. Money orders or cheques or cash will *not be accepted by the University. The fee will not be refunded* once an application has been received by the University.

Incomplete applications and applicatons without the requisite fee will not be considered. Applications on plain paper will not be considered.

Candidates are advised to satisfy themselves before *applying that they* possess the prescribed qualifications and *it is for the candidates* themselves to ensure that they possess the prescribed qualifications. No inquiry asking for advice as to eligibility will be entertained.

Candidates called for interview will have to present themselves at their own expenses.

Canvassing, direct or indirect, will be a disqualification.

†Note:—The post of Sir Walchand Hirachand Reader in Transport Economics will be filled *in only if no suitable* candidate is available for the post of Sir Walchand Hirachand Professor of Transport Economics. Applicants should state in their applications the post i.e. Professor and/or Reader for which they wish to be considered.

*Note:—Persons who had applied for the posts mentioned at serial *numbers* 2, 3, 14 *to* 18, 20, 22 and 27 in response to the previous advertisements *should apply afresh if they* are interested in the posts.

††Note:—Persons who had applied for the post of Sir Dorabji Tata Reader in Pharmaceutical Chemistry in response to the advertisement dated 30th June 1979, need not apply *afresh*. However, if they have any additional information to supply, the same should be supplied in eight copies.

**Note:—The incumbent of the post of Reader in Pharmacology and Physiology is not allowed private practice and also not paid non-private practice allowance.

Bombay-400032 G. M. RAJARSHI
23rd February, 1980 Registrar.

KONKAN KRISHI VIDYAPEETH,

DAPOLI. DIST. RATNAGIRI.
No. EST/A- I/ADVT./XVI/of 1980.
Dated the 12th February, 1980.

Applications in the prescribed form are *invited on or before* 15th April, 1980 for the undermentioned posts. The application forms can be obtained from the Registrar, Konkan Krishi Vidyapeeth, Dapoli) (Pin Code No. 415712), Dist. Ratnagiri, *Maharashtra State* on sending a self-addressed envelope (4" x 9") with the postage of 60 paise and crossed Indian Postal order value of Re. 1/- (Rupee one) payable to the Comptroller, Konkan Krishi Vidyapeeth, Dapoli. The completed application forms accompanied by a crossed Indian Postal Order worth of Rs. 2.50 payable to the Comptroller, Konkan Krishi Vidyapeeth, Dapoli should reach this office not later than **15 4 1980**. The applications received after the due date will not be considered. A separate application with separate fee is required for each post. Government servants and staff working under the local bodies should necessarily apply through proper channel. An advance copy of the application may be sent to this office within the prescribed time limit.

I) **Faculty of Agriculture**

(1) Assistant Statistician: One post (2) Assistant Professor of Agricultural Economics One post. Reserved for S.C./S.T./D.T. & N.T. (3) Assistant Professor of Agricultural Extension: One post. Reserved for S.C./S.T. D.T. and N.T. (4) Bio-Chemist : One post (5) Junior Horticulturist : One post. (6) Assistant Professor of Veterinary Science : Two posts. (One post reserved for S.C./S.T./D.T. & N.T.)

II) ***Faculty of Veterinary Science***

(7) Associate Dean. Bombay Veterinary College. Bombay : one post. (8) Associate Professor of Food Hygiene and Public Health : One post. (9) Assistant *Prof* of Food *Hygiene* and *Public* Health : One post. (10) Assistant Professor of Surgery : One post.

III) **Other Posts**

(11) Director of Students' Welfare: One post. (12) Officer In-charge, Livestock Supervisor's Training Centre: One post.

Pay Scales

i) For the *posts* at Sr. No. 7 : **Rs.** 1500-60-1800-100-2000-125/2-2500. ii) For the posts at Sr No. 8 : **Rs** 1200-50-1300-60-1900. iii) For the posts at Sr. No. 1, 2, 3, 4, 5, 6, 9, 10 **&** 12 : **Rs.** *700-40-1100-50-1600. iv) For the post at* Sr. No. 11 ; **Rs.** 680-40-1000-**EB**-50-1500.

Qualifications

a) **For the post at Sr. No. 7:—**

Essential;

After Ph.D. 7 years experience in teaching or research as evidenced by published research papers or in extesion education.

OR

After Masters' degree 10 year's experience in teaching or research as evidenced by published research papers or in extension education.

Desirable:

Experience in technical administration, ability to initiate and organise research.

b) **For the post at Sr. No. 8:—**

Ph.D. in the subject of (1) Food Hygiene and Public Health or (2) Meat inspection or (3) Veterinary Pathology *or* (4) Veterinary *Parasitology* or (5) Veterinary Bacteriology.

AND

Two years experience in teaching or research as evidenced by published *research papers in extension education.*

OR

After Master's degree in the subject of (1) Food Hygiene and Public Health or (2) Meat Inspection or (3) Veterinary *Path. logy* (4) Veterinary parasitology or (5) Veterinary Bacteriology.

AND

Five years' experience in teaching or research as evidenced by Published research papers or in extension education.

OR

Master's degree in any one of the subject *mentioned* above with a *total* experience of 10 years in teaching or research as evidenced by published research papers or in extension education.

NOTE : Other things being equal preference will be given to those holding Master's degree in (1) Food Hygiene and Public Health or (2) Meat Inspection.

c) ***For the posts at Sr. No. 1, 2, 3, 4, 5. and 10:—***

Ph.D. in the respective subject.

OR

After Master's degree in the respective subject two years' experience in teaching or research as evidenced by published research papers or in extension *education.*

OR

Master's degree in the respective subject with a First Class or equivalent C.G.P.A. either at Bachelor's degree or Master's degree level.

d) **For the post at Sr. No.** 6:—

Ph.D. in any Branch of Veterinary Science.

OR

After Master's degree in any Branch of Veterinary Science two year's experience in teaching or research as evidenced by published research papers or in extension education.

OR

Masters degree in any Branch of Veterinary Science with a First Class or equivalent C.G.P.A. either at Bachelor's degree or at Master's degree level.

e) **For the post at Sr. No. 9:—**

Ph.D. in the subject of (1) Food Hygiene and Public Health or (2) Meat Inspection.

OR

After Master's degree in the subject of (1) Food Hygiene and Public Health or (2) Meat Inspection or (3) Veterinary Pathology or (4) Veterinary Parasitology or (5) Veterinary Bacteriology.

AND

Two years' experience in teaching or research *as evidenced by published* research papers or in extension education.

OR

M.V.Sc. with First class or equivalent C.G.P.A. either at the Bachelor's degree or Master's degree level in (1) Food Hygiene and Public Health or (2) Meat Inspection or (3) Veterinary Pathology or (4) Veterinary Parasitology or (5) Veterinary Bacteriology

f) **For the post at Sr. No. 12:—**

B.V.Sc. and A.H. *degree in at least* Second Class or equivalent with 10 years' experience as Veterinary Officer/ Research Assistant/ Senior Res. Assistant/Demonstrator or its equivalent grade in the Govt. or Semi-Government office.

OR

M.V.Sc. with First class or equivalent C.G.P.A either at Bachelor's or Master's degree level.

g) **For the post at Sr. No. 11:—**

Essential :

Master's degree in Agriculture/Veterinary Science/Arts/Commerce or Science of a recognised University.

AND

At least five years' experience in teaching or research or extension education in a College or an Institute of equivalent status.

Desirable:

At least two years experience in organising Student's Welfare activities in a *College* or an Institute or equivalent status and guiding co-curricular activities of Students.

AGE

1) Maximum age-limit as on 15-4-1980 will ordinarily be 40 years for the posts mentioned at Sr. No. 7 8, 11, 12 and 30 years for the remaining posts. Maximum age-limit is relaxable upto 5 years in deserving cases. The age-limit is not applicable to persons already in the *services of this University.*
2) The pay scales of the above posts carry usual allowance admissible as per rules of the University.
3) Age relaxation for candidates belonging to S.C./S.T./D.T. and N.T. are as per State Government Rules.
4) If the response from highly qualified and more experienced candidates is adequate, those with less qualifications or experience may not be called for interview even though they fulfil the minimum qualifications laid down for the posts.
5) The fact that the posts are advertised does not mean that all the posts will be filled in.
6) The application to be received through *proper channel must reach* this office within 15 days from the last date of submission of application.

CANVASSING IN ANY FORM WILL DISQUALIFY A CANDIDATE FOR EMPLOYMENT UNDER THIS UNIVERSITY.

B.B. Rane
REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

(Recruitment Section)
Advertisement No. 5/80

Applications are invited for the post of Medical Officer in Health Centre in the scale of Rs. 650-30-740-35-810-EB-35-880-430-1000-EB-40-1200+NPA on slab basis at the Indian Institute of Technology, Kanpur. Higher initial start can be given to the deserving candidates.

Number of Vacancies

Five (including one post already advertised through advertisement No. 26/79). Out of these five posts, one post is reserved for candidates belonging to Scheduled Caste community & one post reserved for candidates belonging to Scheduled Tribes Community. Those who have already applied in response to advertisement No. 26/79 need not apply aggin.

Qualifications and Experience

i) Candidate should be M.B.B.S. from University recognised by Indian Medical Council; he should be registered with State Medical Council.
ii) Minimum experience after qualification should not be less than three years, preferably of having worked in a hospital. Preference will be given to persons holding a post-graduate qualification in Child health i.e. D.C.H or M.D. (Pediatric) or M.D. in Medicine.

Upper Age Limit:
45 years on March 1, 1980.

The posts are permanent and carry benefits in the Shape of CPF scheme or CPF-cum-Gratuity Scheme or GPF-cum-Pension-cum-Gratuity Scheme as may be opted according to rules. The age of retirement is 60 years.

Besides pay and NPA, posts carry allowances according to the Institute Rules, which at present correspond to those admissible to Central Government employees stationed at Kanpur. The Medical Officer will be required to stay in the Campus for which a rent free unfurnished residential accommodation will be provided to him in the Campus. Persons already in Government or semi-Government organisations should apply through proper Channel. Candidates called for interview will be paid second class railway fare from the place or duty to Kanpur and back by the Shortest route.

Applications should be made on the prescribed forms obtainable free of cost from the Registrar or the Institute by sending a self-addressed unstamped envelope of 25 cm x 10 cm size. Applications accompanied by an crossed Indian Postal Order for Rs. 7.50 (Rs 1.87 from SC/ST candidates) drawn in favour of Registrar, IIT Kanpur, payable at IIT Post Office will be entertained.

All the applications should reach the Registrar, Indian Institute of Technology, Kanpur 208016, U.P, (India) on or before **March 31, 1980.**

INDIAN INSTITUTE OF TECHNOLOGY,

P.O.I.I.T., POWAI, BOMBAY-400 076

Advertisement No. 993/80

Applications are invited for permanent posts of Executive Engineer (Electrical) and Assistant Librarian at this Institute in the prescribed form obtainable from the Registrar, Indian Institute of Technology, P.O.I.I.T., Powai, Bombay 400 076 on request accompanied by self-addressed envelope (23 cm x 10 cm). Persons employed in Government/Semi-Government Organisations or Educational *Institutions must apply through* proper channel. Completed application together with the requisite copies of certificates and crossed postal order for Rs. 7.50 Rs. 1.88 for SC/ST candidates) as application fee should be sent to the Registrar, Indian Institute of Technology, P.O.I.I.T., Powai, Bombay 400 076 on or before **10 4-1980**. Candidates called for interview will be paid Second Class Rail fare from the place of their residence to Bombay and back by the shortest route.

1. Executive Engineer (Electrical):
Scale of pay: Rs. 1100-50-1600 (Plus usual allowances such as D A., C.C.A., etc. as per rules of the Institute).
Qualifications & Experience

Good Bachelor's degree in Electrical Engineering with at least seven years' experience in the executive position concerning copital works and maintenance of electric supply and *distribution system. Should be able to* co-ordinate the various supply growth plans. Should have experience in the maintenance of water supply and sewage systems and Air-conditioning and Refrigeration loads. Preference will begiven to a candidate having *experience both in Electrical and* Mechanical Engineering. Qualification may be relaxed in the case of candidates with considerable experience and proven ability.

Suitable accommodation will be provided in the Campus on payment of Licence fee etc., as per rules.

2. Assistant Librarian:
Scale of Pay: Rs. 700-40-1100-50-1300 (Plus usual allowances such as D.A., C.C.A, etc. as per rules of the Institute)
Quallfications & Experience:

Good Bachelor's degree of a recognised University plus degree/diploma in Library Science. Master's degree in Library Science preferable. 7 years experience in a responsible capacity in a University level Library. Should be well conversant with the day to day working of the Library and Documentation & Information, Book Bank, Special Collections, Readers' Assistance & Providing help in General Library Administration, Maintenance of Reprography Unite Binding, Collections of Technical Reports, Standards & Patent Specifications, Exchange etc.

Indian school of Mines

No: 6J5020/80 **DHANBAD-826004** March 6, 1980

Special classes for the Scheduled Castes/Scheduled Tribes candidates desirous of appearing in the Entrance Examination of the Indian School of Mines, *will be held from March 24 to April 26,1980* at the Indian School of Mines, Dhanbad, in English, Mathematics, Physics and Chemistry. The duration of classes for each of the four subjects will be one hour of instruction daily on every working day in addition to tutorials/practicals. Students enrolled for this programme will be given home assignment which will have to be completed daily.

There will be no special fees for enrolment to these classes or for tuition and hostel accommodation. Students will have to make their own arrangements for boarding, but financial assistance limited to Rs. 6/- per day could be made available for meeting the expenses on boarding.

Students who have already sent their applications for appearing at the Entrance Examination and are desirous of enrolling in this programme may attend the make-up classes from March 24, 1980 to April 26, 1980. They should bring with them necessary documentary evidence to establish that they belong to Scheduled Caste/Scheduled Tribe and for having sent their application for the *entrance exemination. On reaching the Indian School of Mines*, they should contact the Assistant Registrar (Academic).

S.P. VARMA
REGISTRAR

O/ISM/80

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